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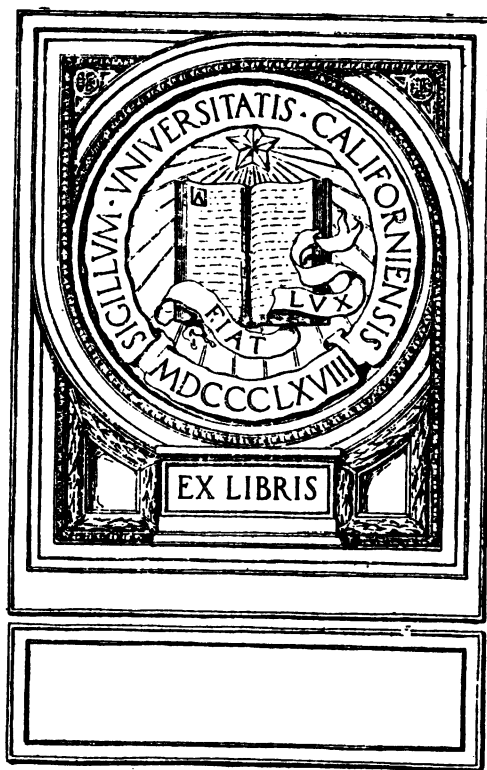
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THE COAL TRADE

*The Year Book of the
Coal and Coke Industry*

BY

SYDNEY A. HALE

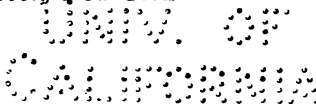
Editor, COAL TRADE JOURNAL

1920

Forty-seventh Annual Edition

The Estate of F. E. Seward, Publisher

20 Vesey Street, New York



PRICE \$4.00

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PRINTED BY W. E. RUDGE, INC., NEW YORK CITY

FOREWORD

The present volume of THE COAL TRADE marks the forty-seventh annual edition of this work, which has come to be recognized as the Blue Book of the Coal and Coke Industry. In line with the advances that have been made in the fuel business since the modest initial volume appeared, it is only natural that the present edition should be the largest in size and the widest in scope yet published. In the compilation of the material incorporated in the pages that follow, two purposes have been kept in view: first, to bring down to the latest available dates the various statistical tables that give a publication of this nature its value for comparative purposes over a series of years; second, to incorporate in it new matter that would make the edition truly representative of the developments peculiar to the past coal and calendar years and consonant with the widening interest in coal topics here and abroad.

The results of these endeavors are evidenced in the sections devoted to the export trade and the history of the general bituminous strike of 1919. In the latter, an effort has been made to give a condensed running account of that struggle and a verbatim reproduction of the more important official and semi-official documents bearing upon the various stages of the strike. Because the strike brought about a revival of Fuel Administration price control and distribution, the latter through the agency of the United States Railroad Administration, the price schedules which were such a feature of the preceding edition of THE COAL TRADE are repeated in abbreviated form.

The interest that is being taken in the export situation is, it is hoped, met by the heavy expansion in the space devoted to that phase of the coal question. Not only are the statistics with respect to American coal exports and imports given as fully as in the past, but the data with reference to production, consumption, imports and exports in foreign countries have been greatly augmented. There was a time when an American study of the coal export trade might stop with a review of shipments from the United Kingdom, but the upsets of the world war have made that impossible. We must now consider Asiatic, African and Oceanic coals as factors in the foreign markets which were once undisputably England's.

The value of a work of this character must depend more upon its eclectic selection than originality. This foreword, therefore, would be incomplete if it did not express the thanks of the editor to the many men whose cheerful cooperation has made THE COAL TRADE possible. Officials of the United States and foreign government bureaus having to do with coal and shipping, state and district mining boards and bureaus, representatives of the traffic and accounting departments of the leading coal-carrying roads, secretaries of business organizations, officers of coal associations and individual coal men and the field force of the COAL TRADE JOURNAL have all contributed to the data upon which this work is built. Their cooperation has given the work an authenticity that could not otherwise be obtained.

The reviews of market conditions in the different cities are, in the majority of cases, the work of the representatives of the COAL TRADE JOURNAL in those communities.

Unless otherwise specified all figures with respect to domestic production and distribution are stated in net tons; anthracite figures, unless otherwise specified, are in gross tons. The gross ton is also used in export and import statistics covering the United States and the United Kingdom. Continental European and Latin-American statistics are generally given in metric tons.

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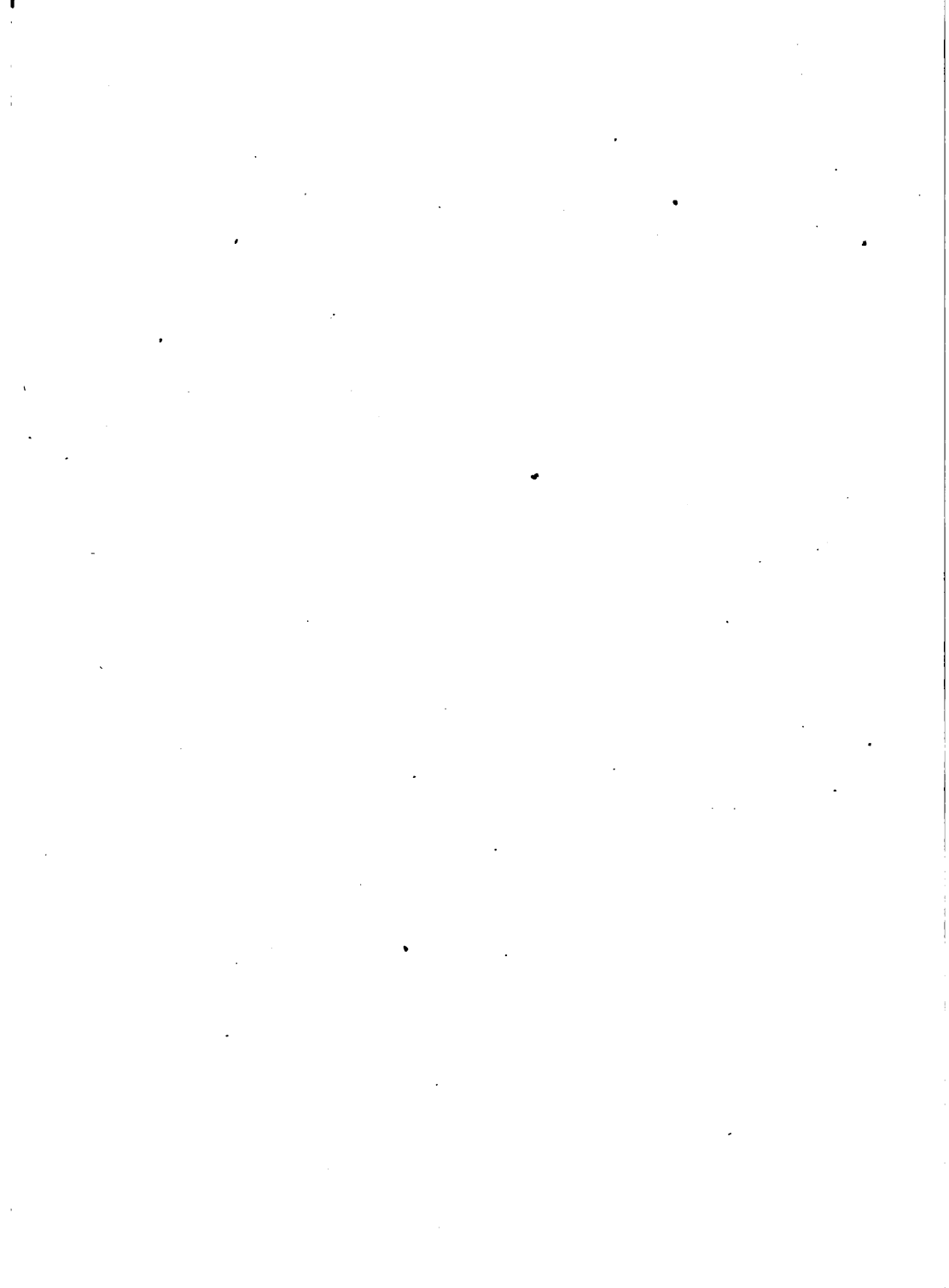
The 48th annual edition

of

THE COAL TRADE

will be published in
the summer of 1921.

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Review of the Year 1919

Unrest was the outstanding feature in world history during 1919, and the coal trade of the United States was compelled to suffer its share of the common malady. Beginning the year under strict government supervision over prices and distribution, it was freed from those restraints in a few weeks only to go down in temporary defeat before the industrial slump of the post-armistice period. Stocks accumulated during the fall of 1918 in anticipation of another year of European warfare, in the light of the mild winter of 1918-19 and the reduced industrial activity that came on the heels of the cessation of major hostilities across the seas, proved too large for the country to absorb. Buying consequently touched a low point and output fell far below the banner records of 1918. A measure of recovery in tonnage was first effected in the anthracite division, following some active local and general publicity work in March and April. The turn in bituminous demand did not come in full force until about the middle of July. Although it eased off some in the next few weeks because of transportation difficulties, the threat of a general bituminous strike quickened demand until the last of October saw production records approaching the high water mark attained in July, 1918. On November 1 came the strike in the unionized soft coal fields of the country, and for six weeks output limped along on a 40 per cent. basis.

Under such circumstances it is not then surprising that the total bituminous production for the year, estimated at 458,063,000 net tons, should have been the lowest in four years. In this, however, the United States did not differ from other large coal-producing nations; in fact, with world coal production as a whole back to 1910 levels last year, that the output in this country should have exceeded that of 1915 is no small achievement. Preliminary estimates based upon reports to the Supreme Economic Council of the Allies from countries contributing approximately 85 per cent. of the world's production, place the total output for 1919 at 1,170,000,000 metric or 1,290,000,000 net tons, as compared with 1,160,000,000 metric tons in 1910. The record, in part estimated, since 1910, and the percentage of the total production furnished by the mines of the United States is shown in the following table:

Year	Production Metric tons	Per cent. produced by United States	Year	Production Metric tons	Per cent. produced by United States
1910.....	1,160,000,000	39.2	1915.....	1,190,000,000	40.5
1911.....	1,189,000,000	37.9	1916.....	1,270,000,000	42.1
1912.....	1,249,000,000	38.8	1917.....	1,336,000,000	44.2
1913.....	1,341,000,000	38.5	1918.....	1,332,000,000	46.2
1914.....	1,208,000,000	38.5	1919.....	1,170,000,000	42.1

PRODUCTION OF WARRING NATIONS COMPARED

A comparison of the production in 1913 and 1919 of the principal late belligerents shows the following data:

Country	1913 Metric tons	1919 Metric tons
United Kingdom	292,000,000	237,000,000
France *	44,000,000	22,000,000
Belgium	23,000,000	18,000,000
Germany ‡		
Bituminous	173,000,000	109,000,000
Lignite	87,000,000	94,000,000

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United States	517,000,000	494,000,000
Austria-Hungary	55,000,000	**

*Includes Alsace-Lorraine.

†Excludes Alsace-Lorraine and the Saar.

**Figures not available; the bulk of the coal lands of the former dual empire went to Czecho-Slovakia where the 1919 output was about one-third less than the same mines produced in 1913.

Monthly production last year and monthly averages since 1913 in the United States and certain European countries, as compiled by the Supreme Economic Council, with readjustments in American and British statistics by the United States Geological Survey show the following outputs in metric tons:

Period	Un'd States (all coal)	Un'd Kingdom (all coal)	France*	Belgium	Netherlands Coal Lignite	Germany† (excl. lig.)
Monthly average:						
1913 ...	43,089,000	24,336,000	3,404,000	1,904,000	159,000	14,383,000
1914 ...	38,822,000	22,493,000	2,482,000	1,393,000	165,000	12,331,000
1915 ...	40,190,000	21,439,000	1,686,000	1,182,000	194,000	11,340,000
1916 ...	44,611,000	21,707,000	1,790,000	1,405,000	221,000	12,281,000
1917 ...	49,245,000	21,039,000	2,411,000	1,244,000	261,000	12,822,000
1918 ...	51,272,000	19,282,000	2,078,000	1,152,000	296,000 119,000	12,301,000
1919 ...	41,145,000	19,731,000	1,869,000	1,533,000	294,000 152,000	9,049,000
1919 —						
Jan. ...	44,577,000	19,855,000	2,473,000	1,233,000	298,000 221,000	8,832,000
Feb. ...	33,165,000	19,700,000	2,284,000	1,269,000	270,000 145,000	8,389,000
Mar. ...	35,197,000	20,515,000	2,125,000	1,426,000	294,000 237,000	9,299,000
Apr. ...	35,290,000	19,273,000	1,745,000	1,494,000	281,000 244,000	5,091,000
May ...	40,743,000	22,048,000	1,733,000	1,572,000	299,000 165,000	8,772,000
June ...	40,187,000	18,526,000	858,000	1,456,000	271,000 112,000	8,312,000
July ...	45,814,000	17,861,000	1,430,000	1,659,000	317,000 86,000	9,988,000
Aug. ...	46,090,000	16,174,000	1,787,000	1,573,000	294,000 145,000	8,907,000
Sept. ...	49,655,000	19,192,000	1,838,000	1,685,000	290,000 141,000	9,962,000
Oct. ...	58,697,000	19,687,000	2,265,000	1,885,000	318,000 114,000	10,358,000
Nov. ...	23,940,000	20,110,000	1,820,000	1,692,000	290,000 86,000	10,217,000
Dec. ...	40,394,000	20,257,000	2,066,000	1,449,000	311,000 128,000	10,458,000

*Includes output of Alsace-Lorraine in 1919.

†Includes bituminous output of the Ruhr, Upper and Lower Silesia, Saxony, and Aachen districts. Excludes the Saar and Alsace-Lorraine. In addition Germany has a large production of lignite which amounted in 1919 to nearly 8,000,000 tons per month.

UNITED STATES PRODUCTION IN 1919

More detailed figures covering production in this country appear in the following table, which shows in net tons and by states production in 1917 and 1918 and estimates for 1919 as made by the United States Geological Survey.

State	1917	1918	1919 (estimated)
Alabama	20,068,074	19,184,962	15,230,000
Alaska	53,955	75,606	53,000
Arkansas	2,143,579	2,227,369	1,680,000
Colorado	12,483,336	12,407,571	10,100,000 ^a
Illinois	86,199,387	89,291,105	64,600,000
Indiana	26,539,329	30,678,634	20,500,000
Iowa	8,965,830	8,192,195	6,300,000
Kansas	7,184,975	7,561,947	5,750,000
Kentucky	27,807,971	31,612,617	28,500,000
Maryland	4,745,924	4,497,297	2,970,000
Michigan	1,374,805	1,464,818	930,000 ^b
Missouri	5,670,549	5,667,730	4,060,000

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State	1917	1918	1919 (estimated)
Montana	4,226,689	4,532,505	3,300,000
New Mexico	4,000,527	4,023,239	3,170,000
North Dakota	790,548	719,733	750,000 ^c
Ohio	40,748,734	45,812,943	35,050,000
Oklahoma	4,386,844	4,813,447	3,200,000
Pennsylvania (bitum.)	172,448,142	178,550,741	145,300,000 ^d
Tennessee	6,194,221	6,831,048	5,150,000
Texas	2,355,815	2,261,135	1,600,000 ^a
Utah	4,125,230	5,136,825	4,570,000 ^e
Virginia	10,087,091	10,289,808	9,500,000
Washington	4,009,902	4,082,212	3,100,000
West Virginia	86,441,667	89,935,839	75,500,000
Wyoming	8,575,619	9,438,688	7,100,000
Other States ^f	161,820	95,806	100,000
Total bituminous	551,790,563	579,385,820	458,063,000
Pennsylvania (anth.) ..	99,611,811	98,826,084	86,200,000
Grand total	651,402,374	678,211,904	544,263,000

- (a) Estimate of State Mine Inspector, modified to exclude washery refuse.
 (b) Based on reports of State Department of Labor for first eleven months with estimate for December.
 (c) Estimated from report of State Mine Inspector for year ended October 31.
 (d) Exceeds tonnage reported by State Department of Mines, which, however, does not include wagon mines.
 (e) As reported by State Mine Inspector.
 (f) California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

What was said with respect to the production trend of the year in the opening paragraph of this review is illustrated forcibly both by the tabulation of combined monthly production appearing ante and by the monthly statements of anthracite and bituminous output shown elsewhere separately in this volume. The distinctly subnormal averages for the first six months of the past calendar year reveal in a large way what is told in greater detail in the market reviews that follow (see pp. 11-53). The country started the year with some 57,900,000 tons of coal in consumer and dealer storage. Along the Atlantic seaboard trade was in the doldrums. Overseas export shipments were in fair volume and substantially greater than in the preceding year, but the total tonnage so moved was not sufficiently large to add a real zest to the trade. In the West and Southwest, activity was for the most part confined to weather spurts. Retailers in the Central and Western states were overstocked with coals forced upon them by the zoning system (see p. 195, 46th edition, 1919). In the early months of the year, many anthracite, as well as bituminous operations, were curtailed because of the lack of demand for coal.

FUEL ADMINISTRATION REGIME IN POWER AT OPENING OF YEAR

At the outset the attention of the coal men was still centered upon the Fuel Administration régime. When would control end? The answer was not long delayed. Announcement was made on January 17, that, effective February 1, the zoning system and the maximum price control on bituminous coal and coke would be lifted. The announcement with respect to zoning was greeted with dismay, while that with respect to prices was hailed with joy. Particularly in Chicago and points similarly situated was there insistence that the zone plan be permitted to run until the new coal year. The retailers in those sections argued, with the support of the National Retail Coal Merchants' Association and many of the better class of eastern producers, that retail yards had been stocked with Illinois and Indiana coal at the behest of the Fuel Administration and that to allow an influx of the more popular eastern grades would work a

hardship upon those dealers that had cooperated with the government in its "buy early" campaign of the preceding year. To these appeals, however, the Fuel Administration turned a deaf ear.

The orders that finally became effective February 1, however, went beyond the scope of the original announcement. Anthracite, which was to be continued under control, was freed with an admission that the maximum prices in effect had been unjust to the producing companies. "For the purpose of arriving at a fair increase in price to cover the increase in wages recommended by the War Labor Board last October (1918)," said an explanatory statement from the Fuel Administration, "an examination was made to determine the costs of the various anthracite producing companies. The result of this examination showed that the general increases in the price of materials and labor had raised the cost of mining anthracite to such an extent that many of the companies were not receiving a fair return and that some producers of necessary coal were actually sustaining a loss on the sale of coal at the government prices, in spite of two increases allowed on account of advances to labor.

GARFIELD CONFESSES ANTHRACITE MAXIMA TOO LOW

"At the time this situation was discovered every indication pointed to an early peace and it was deemed unwise to increase the maximum price so near the time, when, on account of the end of the war, price restrictions would in the natural course of events be lifted entirely. The above statement is made at this time when price restrictions are about to be lifted out of fairness to those companies who have responded patriotically to war needs, even at a cost which resulted in many instances in a loss, not only by the individuals, but also by some of the railroad companies. Had the Fuel Administration's active control over maximum prices on anthracite coal continued, the cost examination above referred to shows that it would have been necessary on the basis of the present wage scale to raise these maximum prices possibly as much as 50 cents a ton above those last fixed by the government in order to prevent financial embarrassment and perhaps the closing of companies producing a substantial per cent. of the necessary anthracite output."

Insofar as bituminous was concerned the suspension orders left the shippers free to make such prices as they saw fit, but provided that all contracts entered into should be subject to Fuel Administration control at a later date should that agency again assume active supervision of the industry. Zoning restrictions were abolished. Shipment of coal to tidewater through the pools of the Tidewater Coal Exchange was made compulsory until March 1 and shipment of bituminous elsewhere was bound up with a prohibition against reconsignment. This last proviso, eliminated a month later, immediately provoked heated protest from the wholesale interests.

EFFECT OF OPEN PRICE COMPETITION

The glutted condition of the bituminous market at the time the price restrictions were lifted made the first reactions spotty, but even in the first weeks of February there were plain indications of the general trend that characterized quotations until the shadow of the general coal strike again destroyed all comparative values. This general trend was towards an advance in the higher quality coals which in many cases, because the government maxima had been based solely upon production costs, had been selling at or below the maxima fixed upon less desirable grades and a reduction in the prices on those grades. During the first few days of the month, however, there were many times when this general rule did not hold good, but that those exceptions had to do chiefly with temporary accumulations of spot coal. Pittsburgh mine-run for example, on a government basis of \$2.35, sold down as low as \$1.80 and \$2, while contract

figures were being made on a \$2.50 mine-run basis. Logan County, West Virginia, dropped from \$2.75 to \$2. Southern Illinois base prices, on the other hand, advanced from \$2.55 to \$2.75 and West Virginia smokeless sold from \$2.35 and \$2.70 up to \$3. Eastern Kentucky grades were also marked up about 15 cents per ton.

Throughout February and March, while the market was trying to find itself, there were wide fluctuations in prices in the same fields. Pittsburgh district mine-run, which sold as low as \$1.80, however, soon hardened to a \$2.35 basis. Central Pennsylvania prices ranged from \$2.30 to \$3.15 in February to \$2.70 to \$2.90 in March. Harlan prepared coals were quoted at \$2.95 to \$3.20 in March and \$2.85 to \$3.05 in March. Smokeless mine-run, selling as high as \$3, showed a tendency to hang at \$2.75.

The prices just quoted were spot figures. Average weighted prices on the mine-run basis for coal sold during the first four months of the coal year beginning April 1, 1919, according to figures presented to the Frelinghuysen subcommittee of the United States Senate were as follows:

District	Government Maximum	Average Price Per Net Ton			
		April	May	June	July
Pittsburgh	\$2.35	\$2.32	\$2.32	\$2.36	\$2.37
Central Pennsylvania	2.95	2.81	2.65	2.63	2.74
Northwestern Pennsylvania	2.95	2.52	2.40	2.56	2.31
Hazard	2.55	2.46	2.56	2.46	2.36
Harlan	2.55	2.64	2.50	2.55	2.59
Southern Illinois	2.35	2.38	2.44	2.43	2.45
Central Illinois	2.35	2.16	2.15	2.15	2.17
Indiana	2.35	2.21	2.16	2.18	2.16
Northern West Virginia	2.50	2.39	2.34	2.27	2.21
Kanawha	2.60	2.27	2.20	2.19	2.18
Smokeless (W. Va.)	2.51	2.79	2.74	2.71	2.86
Eastern Ohio	2.35	2.23	1.90	2.05	1.89
Southern Ohio	2.60	*2.28	*2.22	*2.17	*2.15

*Exclusive of railroad fuel tonnages.

The foregoing table, taken in connection with the spot ranges above quoted (from which extremes have been purposely excluded), illustrates clearly how uneven day to day transactions were while the operators were endeavoring to stabilize the business, and how the occasional high price that was exploited in the public prints was more than offset by the sale of coal on contract and the sacrifices made on distress fuel.

PRICES REACT UNDER THREAT OF STRIKE

Throughout August, September and October, although there were the inevitable minor day to day fluctuations, the general movement of prices was upward because of three things: (1) a gradually increasing demand for coal as the result of recovery from the initial effects of the post-armistice industrial collapse; (2) interference with distribution through a series of railroad strikes beginning with the clerical and shop forces on the Norfolk & Western, and (3) the desire to deliver as much coal as possible before the bituminous strike scheduled for November 1. During the last few days of October quotations were as follows: Central Pennsylvania, \$4 to \$5; Pittsburgh district mine-run \$4, average; Hocking lump, \$3.75 to \$5; Kanawha mine-run, \$3.50, and lump, \$5; smokeless mine-run, \$3.50 to \$3.75; eastern Kentucky block, \$4 to \$5.25; western Kentucky lump, \$2.60 to \$3.25; southern Illinois prepared coals, \$3 to \$3.25; screenings, \$1.65 to \$2.50; central Illinois prepared, \$2.25 to \$3; screenings, \$1.75 to \$2.25. Effective October 30 came the revival of Fuel Administration maximum prices (see under "Fuel Administration Bituminous Price Schedules,"

post.). Except for the relief given with respect to shipments on bona fide contracts entered into prior to that date, the federal maxima prevailed throughout the rest of the year and up to April 1, 1920.

Aside from the general bituminous strike, which is treated in detail in another part of this volume, the question that caused the greatest concern to the producers was the matter of railroad fuel contracts. It will be recalled that during 1918 the transportation lines under the direction of McAdoo and John S. Williams had insisted that they should be given preferential treatment in the matter of prices and that the controversy was decided adversely to them only after Fuel Administrator Garfield had carried it to President Wilson. With the signing of the armistice on November 11, 1918, the purchasing section of the United States Railroad Administration seemed to feel that the time was ripe to renew their demands for price concessions. The efforts of Secretary of Commerce Redfield to "stabilize" general business conditions by having a frank understanding between business interests and government purchasing divisions was first blocked and then wrecked by the attitude of the Railroad Administration. Indeed, even before this abortive movement had got under way, pressure was so strong from railroad purchasing agents that Ohio operators took counsel among themselves at a meeting in Cleveland January 3. Several days later the new Director General of Railroads, Walker D. Hines, publicly denied that the railroads under his jurisdiction were combining to break prices. In a statement issued on January 17, he said:

"The idea seems to have been suggested in some quarters that the Railroad Administration proposes to pursue a policy of so combining and using its purchasing bureau as to break down coal prices with the result of forcing a reduction in the existing rates of pay for mining labor: this is not the case. It is the policy of the Railroad Administration to avoid at this time any undue concentration of its purchasing power of coal and to accomplish this purpose by permitting each road to purchase its own coal. It is further the policy of the Railroad Administration to require that all bids made and accepted shall be based on the existing scale of wages."

RAILROADS ACCUSED OF CONTRACT-BREAKING

Despite this announcement, the report of the committee on railroad relations presented to the January meeting of the board of directors of the National Coal Association stated that "we have recently received reports from all sections of the country of attempts upon the part of the railroads to abrogate their fuel contracts, of direct requests for reduction in the prices of railroad contracts now in force and of the shifting of orders from one field to another." With the suspension of federal price control February 1 came demands from railroad interests for a price adjustment on the theory that the prices named in their contracts no longer held. The coal operators offered to be bound by a price decision of the Redfield Industrial Board if the Railroad Administration would be similarly bound. Mr. Hines pointedly refused and accused the operators of endeavoring to establish through the Industrial Board an unreasonable price basis upon railroad fuel so that the producers might use it as a club on other consumers. The operators answered promptly with a statement of their position and specific evidence of the manner in which Mr. Hines' earlier promises with respect to policies to be pursued in fuel contracts had been violated by the carriers. Subsequently the mine-workers' international organization called the Railroad Administration to time on the same subject, accusing Mr. Hines and his associates of disrupting working conditions with the manner of alleged preferential placement of fuel contracts. Although later in the year other questions crowded out this issue, silence did not mean the solution of the problem, which

was passed on to 1920 in all of its complexity. Incidentally the Railroad Administration closed some contracts as low as \$1.88 per ton.

In view of the general unsettled state of affairs it is not perhaps surprising that the coal industry should have been subject to numerous investigations of one sort and another. The subcommittee of the committee on manufacturers of the Senate made its valedictory report upon anthracite in the early part of the year with a muck-raking attack upon the anthracite trade by retiring Senator Vardaman in which the gentlemen from Mississippi exhumed the old charges of monopolistic control, charging the railroad-affiliated producing companies with holding lands undeveloped and refusing leases and asking the government to fix prices. Samuel D. Warriner, president, Lehigh Coal & Navigation Co., in a pointed statement, said that the Senator's charges with respect to holding back development were not in accord with the testimony taken by the committee and asked why, in talking of prices, the Mississippian had failed to mention the share of labor in production costs.

FRELINGHUYSEN INVESTIGATION INTO COAL TRADE

The most important investigation, however, was that conducted during the summer by the Frelinghuysen subcommittee of the Senate committee on interstate commerce. Joseph S. Frelinghuysen, a Senator from New Jersey, about the middle of July introduced a resolution asking for an inquiry into "the cause or causes which have brought about the enormous increase in the market price of coal, and to that end obtain full data regarding freight rates, wages, profits, and other matters bearing upon the question under consideration with a view to ascertaining who or what may be responsible for such increase in price, whether due to economic causes, and therefore proper and right, or whether due to manipulation or profiteering on the part of the miners, shippers or dealers in coal." The introduction and enactment of this resolution led to the quiet smothering of a demand for an investigation made in the House by Representative Huddleston, who was very active about this time in demanding a revival of federal control and government prosecution of the coal men. A subcommittee consisting of Senators Frelinghuysen, Elkins (West Virginia), Myers (Montana), Wolcott (Delaware) and McLean (Connecticut) was named to hear testimony. Hearings began August 26 and were held intermittently until October. While public and Senatorial interest in the investigation soon touched zero, the hearings were remarkable for the fact that they appeared to be conducted with an earnest desire to develop an unprejudiced presentation of the facts with relation to the industry, and it was not until March, 1920, when the subcommittee began to consider the program for seasonal rates and the appointment of a Federal Coal Commissioner that the industry was placed upon the defensive.

Looking towards the future, it can not be said that January 1, 1920, or even April found the coal industry any nearer a solution of the problems of its relations to the public and its relations with the government than it was January 1, 1919. Indeed, in certain respects, the drawbacks to solution remained the same. At the beginning of 1919, the industry was under federal price and distribution control; at the beginning of 1920 it was again under such control. It had, during 1919, definitely rejected a proposal of Dr. Garfield to voluntarily submit to a form of government supervision in which a board upon which operators and miners should have equal representation would be the nucleus about which the regulative machinery would be built. It had rejected that proposal because it felt the manner of representation with a government arbiter would leave it at the mercy of the miner and that the seemingly harmless scheme suggested by the Fuel Administrator would inevitably lead to a scheme of control that was not so innocuous. Today it is opposed to the Frelinghuysen Coal Commissioner idea because it believes that that plan, too, would ultimately develop into

detailed regulation. It is still living under the shadow of the unrepealed Lever law which makes possible control that in the long run can not be beneficial and is estopped by the Sherman law of exercising within itself the control that would protect the public from the results of untrammelled operation of the law of supply and demand in times of stress.

MONTHLY COAL PRODUCTION IN 1918 AND 1919

Preliminary estimates of bituminous coal production (including lignite and coal made into coke) in the United States by months during 1919, compiled by the United States Geological Survey, show a decrease of 121,323,000 net tons when compared with 1918. The comparative figures by months are as follows:

Month	1918	1919	Month	1918	1919
January	42,227,000	41,487,000	August	55,114,000	42,883,000
February	43,777,000	31,566,000	September ...	51,183,000	47,402,000
March	48,113,000	33,719,000	October	52,300,000	56,243,000
April	46,041,000	32,164,000	November ...	43,895,000	18,688,000
May	50,443,000	37,547,000	December	40,184,000	36,612,000
June	51,138,000	37,054,000	Total	579,386,000	458,063,000
July	54,971,000	42,698,000			

In one year the Philadelphia & Reading Coal & Iron Co. hoists from a single shaft in the Mahanoy Valley 1,000,300,000 gallons of water, over a gallon for every minute of time since the Christian era began. The weight of this water approximates 50 per cent. of the weight of all coal taken from 41 of the mines of that company. This supplies one of the reasons for the high cost of anthracite.

COAL PRODUCTION OF THE UNITED STATES

Coal production in the United States during the past five years is shown by states in the table following. All figures are in net tons. Further details with reference to the output of individual states will be found in other parts of this edition; indexed under state headings.

BITUMINOUS	1915	1916	1917	1918	1919*
Pennsylvania	157,955,137	170,295,424	172,448,142	178,550,741	145,300,000 (a)
West Virginia	77,184,028	86,460,127	86,441,667	89,935,839	75,500,000
Illinois	58,829,576	66,195,336	86,199,387	89,291,105	64,600,000
Ohio	22,434,691	34,728,219	40,748,734	45,812,943	35,050,000
Kentucky	21,361,674	25,393,997	27,807,971	31,612,617	28,500,000
Indiana	17,006,152	20,093,528	26,539,329	30,678,634	20,500,000
Alabama	14,927,937	18,086,197	20,068,074	19,184,962	15,230,000
Colorado	8,624,980	10,484,237	12,483,336	12,407,571	10,100,000 (b)
Virginia	8,122,596	9,707,474	10,087,091	10,289,808	9,500,000
Wyoming	6,554,028	7,910,647	8,575,619	9,438,688	7,100,000
Iowa	7,614,143	7,260,800	8,965,830	8,192,195	6,300,000
Kansas	6,824,474	6,881,455	7,184,975	7,561,947	5,750,000
Tennessee	5,730,361	6,137,449	6,194,221	6,831,048	5,150,000
Missouri	3,811,593	4,742,146	5,670,549	5,667,730	4,060,000
Utah	3,108,715	3,567,428	4,125,230	5,136,825	4,570,000 (c)
Oklahoma	3,693,580	3,608,011	4,386,844	4,813,447	3,200,000

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BITUMINOUS	1915	1916	1917	1918	1919*
Maryland	4,180,477	4,460,046	4,745,924	4,497,297	2,970,000
Montana	2,789,755	3,632,527	4,226,689	4,532,505	3,300,000
New Mexico	3,817,940	3,793,011	4,000,527	4,023,239	3,170,000
Washington	2,429,095	3,038,588	4,009,902	4,082,212	3,100,000
Texas	2,088,908	1,987,503	2,355,815	2,261,135	1,600,000(c)
Arkansas	1,652,106	1,994,915	2,143,579	2,227,369	1,680,000
Michigan	1,156,138	1,180,360	1,374,805	1,464,818	930,000(d)
North Dakota	528,078	634,912	790,548	719,733	750,000(e)
Georgia	134,496	173,554	119,028	101,000*	†
Oregon	39,231	42,592	28,327	†	†
California	12,503	7,240	6,423	95,806‡	100,000‡
South Dakota	10,593	8,886	8,042	†	†
Total, net tons....	442,624,426	502,519,682	551,790,563	579,385,820	458,063,000
ANTHRACITE	88,995,061	87,578,493	99,611,811	98,826,084	86,200,000
Gr'd total, net tons.	531,619,487	590,098,175	651,402,374	678,211,904	544,263,000

* Estimated.

† Included under California.

‡ Covers California, Oregon, South Dakota, Idaho, Georgia (1919), North Carolina and Alaska.

(a) Exceeds tonnage reported by state department of mines, which does not include wagon mines.

(b) Estimate of state mine inspector modified to exclude washery refuse.

(c) As reported by state mine inspector.

(d) Based on state reports for first eleven months.

(e) Estimated from state report for year ended October 31.

COAL AND ORE MOVEMENT ON THE GREAT LAKES

The following statement, furnished through the steamboat inspection service, Department of Commerce, shows the amount of bituminous coal and ore shipped on the Great Lakes during the season of 1919. The amount of ore shipped during 1919 was 47,130,733 gross tons. The shipments for 1918 totaled 61,156,732 tons; in 1917 the figures were 62,498,901, while for the banner year of 1916 a total of 64,734,198 gross tons were piled up. Bituminous coal loaded into vessels at Lake Erie ports was as follows:

	1918	1919
Cargo	28,153,317	21,713,341
Fuel	1,234,925	1,037,051
Total	29,388,242	22,750,392

AVERAGE PRICE FOR COAL AT THE MINES

Anthracite and bituminous prices, per net ton, at mines, for ten years have been as follows, according to figures furnished to the United States Geological Survey:

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Bituminous ...	\$1.20	\$1.12	\$1.11	\$1.15	\$1.18	\$1.17	\$1.13	\$1.32	\$2.26	\$2.58
Anthracite	1.84	1.90	1.94	2.11	2.13	2.07	2.07	2.30	2.85	3.40

These figures are based upon the total tonnage shipped of all grades, sizes and qualities, with the due proportion of each.

State	1913	1914	1915	1916	1917	1918	Advance in 1918
Alabama	\$1.31	\$1.34	\$1.28	\$1.37	\$2.27	\$2.85	\$0.58
Arkansas	1.76	1.72	1.79	1.92	2.56	3.67	1.11
California	3.54	2.85	2.54	2.12	2.30	2.70	.40

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State	1913	1914	1915	1916	1917	1918	Advance in 1919
Colorado	1.52	1.66	1.58	1.62	2.22	2.69	.47
Georgia	1.41	1.44	1.72	1.79	2.53	3.59	1.06
Idaho	2.43	*	*	*	*	*	*
Illinois	1.14	1.12	1.10	1.25	1.88	2.32	.44
Indiana	1.11	1.10	1.10	1.27	1.99	2.29	.30
Iowa	1.79	1.79	1.78	1.86	2.35	3.02	.67
Kansas	1.67	1.64	1.66	1.78	2.31	2.91	.60
Kentucky	1.05	1.02	1.01	1.19	2.17	2.55	.38
Maryland	1.24	1.27	1.28	1.56	2.46	2.77	.31
Michigan	1.99	1.99	2.05	2.25	3.22	3.83	.61
Missouri	1.73	1.73	1.73	1.91	2.43	3.02	.59
Montana	1.74	1.75	1.62	1.73	2.11	2.53	.42
New Mexico	1.46	1.61	1.44	1.47	1.86	2.68	.82
North Dakota	1.52	1.52	1.45	1.49	1.80	2.26	.46
Ohio	1.10	1.13	1.08	1.33	2.48	2.58	.10
Oklahoma	2.05	2.06	2.01	2.09	2.81	3.64	.83
Oregon	2.53	2.78	2.84	2.68	3.38	2.81	†.57
Pennsylvania, bituminous..	1.11	1.07	1.06	1.30	2.44	2.59	.15
South Dakota	1.96	1.73	1.55	2.03	2.90	2.80	†.10
Tennessee	1.14	1.14	1.13	1.23	2.19	2.83	.64
Texas	1.77	1.69	1.65	1.56	1.77	2.63	.86
Utah	1.65	1.59	1.58	1.62	2.07	2.71	.64
Virginia	1.01	1.01	.98	1.06	2.00	2.51	.51
Washington	2.38	2.20	2.17	2.27	2.68	3.46	.78
West Virginia	1.01	.99	.97	1.18	2.32	2.56	.24
Wyoming	1.56	1.55	1.46	1.55	1.93	2.39	.46
Total bituminous	1.18	1.17	1.13	1.32	2.26	2.58	.32
Pennsylvania, anthracite ..	2.13	2.07	2.07	2.30	2.85	3.40	.55

* Included in California. † Decrease.

As has been said in preceding editions of THE COAL TRADE, while these figures have the accuracy guaranteed by governmental investigation, yet it must be recognized that averaging up the entire output in such a way embraces so many dissimilar factors that an application of the average must be made only with caution. For instance, the anthracite figures include the price realized on all sizes of coal, even down to culm, sold, perhaps, at a merely nominal price. The bituminous figures not only include the high prices realized at certain remote places where the cost of mining is high, but also include the tonnage supplied on large contracts by concerns having a more or less definite interest in the affairs of their customers.

TONNAGE AND VALUE OF UNITED STATES COAL

The tonnage and value of the coal produced in the United States during 1917 and 1918, as shown by the reports compiled by the United States Geological Survey, were as follows:

State	Net tons, 1917	Value, 1917	Net tons, 1918	Value, 1918
Alabama	20,068,074	\$45,616,992	19,184,962	\$54,752,329
Arkansas	2,143,579	5,492,777	2,227,369	8,172,376
California, Alaska and Idaho..	60,378	280,108	82,006	429,100
Colorado	12,483,336	27,669,129	12,407,571	33,404,743
Georgia	119,028	301,391	66,716	239,377
Illinois	86,199,387	162,281,822	89,291,105	206,860,291
Indiana	26,539,329	52,940,106	30,678,634	70,384,601
Iowa	8,965,830	21,096,408	8,192,195	24,703,237

State	Net tons, 1917	Value, 1917	Net tons, 1918	Value, 1918
Kansas	7,184,975	16,618,277	7,561,947	22,028,142
Kentucky	27,807,971	60,297,653	31,612,617	80,666,842
Maryland	4,745,924	11,667,852	4,497,297	12,466,189
Michigan	1,374,805	4,426,314	1,464,818	5,615,097
Missouri	5,670,549	13,755,864	5,667,730	17,126,498
Montana	4,226,689	8,919,136	4,532,505	11,444,875
New Mexico	4,000,527	7,455,166	4,023,239	10,787,082
North Dakota	790,548	1,425,750	719,733	1,629,668
Ohio	40,748,734	100,897,148	45,812,943	118,095,518
Oklahoma	4,386,844	12,335,413	4,813,447	17,508,884
Oregon	28,327	95,663	13,328	37,454
Pennsylvania—Anthracite	99,611,811	283,650,723	98,826,084	336,480,347
Pennsylvania—Bituminous	172,448,142	421,268,808	178,550,741	463,159,736
Total Pennsylvania	272,059,953	704,919,531	277,376,835	799,640,083
South Dakota	8,042	23,346	7,942	22,230
Tennessee	6,194,221	13,592,998	6,831,048	19,305,203
Texas	2,355,815	4,177,608	2,261,135	5,937,997
Utah	4,125,230	8,531,382	5,136,825	13,937,097
Virginia	10,087,091	20,125,713	10,289,808	25,865,895
Washington	4,009,902	10,727,362	4,082,212	14,132,869
West Virginia	86,441,667	200,659,368	89,935,839	230,508,846
Wyoming	8,575,619	16,593,283	9,438,688	22,581,019
Totals, net tons and dollars.	651,402,374	1,532,658,243	678,211,904	1,828,290,287

TRADE IN BALTIMORE IN 1919

The year 1919 in the coal trade of Baltimore will be remembered mainly because of its troubles under government control of the industry. In the matter of tonnage the year turned out to be a healthy one—in fact it would probably have been a record one both as to export and domestic trading had it not been for the strike period and the government restrictions that came under strict lines of diversion and apportionment of fuel for home consumption and the ban on export and bunker business that put an end to a volume movement along that line.

Baltimore was more fortunate in 1919 than a good many other points. While there were periods when the domestic situation was very tight—indeed critical for a few of the larger industries and public service corporations—there was no time when shutdowns for lack of fuel became necessary. The shortage forced some industries to take up the burning of fuel oil to help out, but a number of such plants are now drifting back to coal that the fuel oil costs have so far mounted over the costs of burning coal.

The pier situation was interesting. Because of destruction by fire of the Port Covington pier of the Western Maryland R.R. (now being reconstructed) at a time when the growing exports were about to force its reopening, the wartime plan of consolidating all export and bunker business of the B. & O. and Western Maryland at the Curtis Bay pier of the former road was continued by the government control. The Canton pier of the Pennsylvania was just coming into its own with very heavy export business when the government ordered the ban on foreign shipments. The interlacing of the railroad shipments generally here under government control makes a separation of tonnages rather difficult.

EXPORT TONNAGE TOTALED 1,717,342 TONS

The Baltimore district as a whole absorbed or sent coastwise or export about 6,000,000 tons of all kinds of fuel in the year 1919. On bituminous exports alone the total was 1,717,342 tons, of which Curtis Bay reported handling for the B. & O. and Western Maryland a total of 1,478,527 tons. The balance of

238,815 tons on export bituminous went over the Canton pier of the Pennsylvania. On bunker coal for vessels carrying export cargo coal the Curtis Bay pier loaded a total of 500,882 tons of the total of 524,970 reported by the Custom House as the port figure. On anthracite exports the Curtis Bay pier handled 924 tons and the Canton pier 1,516 tons of the port total of 2,440 tons. The coastwise bituminous loading of the Curtis Bay pier was 411,390 tons and the anthracite coastwise movement of the same pier 56,887 tons. The total activity of the Canton pier of the Pennsylvania R.R., including coal dumped from all sources of receipt, was 1,271,523 tons. Of this tonnage 1,124,943 was bituminous and 146,580 tons was anthracite. No coke was handled at the pier. The dumpings were for bunker, export, coastwise, bay and harbor delivery.

The entire amount of bituminous, anthracite and coke handled in Baltimore by the B. & O. for track, coastwise, export and bunker account was in excess of 3,100,000 tons. The Pennsylvania and Western Maryland handled between 600,000 and 700,000 tons of anthracite for the Baltimore district domestic consumption, in addition to the coastwise and export handlings, and a considerable tonnage on steam sizes to some industrial plants here.

The following is a statement by the Baltimore & Ohio R.R. of the amounts of anthracite and bituminous coal and coke tonnage dumped over piers at Curtis Bay and Locust Point during 1919:

Month	Curtis Bay			Locust Point	
	Anthracite	Bituminous	Coke	Anthracite	Bituminous
January		92,929	2,919	549	42,038
February		53,007	2,483	5,146	54,548
March		33,687	2,613	393	46,395
April	90	93,481	6,593	370	51,170
May		110,362	5,174	769	42,068
June		230,967	8,663	475	43,734
July		239,988	3,303	784	42,277
August	743	240,120	8,327	5,095	48,100
September		302,771	8,270	9,807	65,531
October		336,166	10,180	9,822	80,261
November	91	31,261	15,686	10,686	45,631
December	1,841	29,804	.....	11,050	34,503
Total	2,765	1,794,543	74,211	55,046	596,256

DISTRIBUTION OF B. & O. TONNAGE

The following table shows the distribution of the receipts of all coal over the Baltimore & Ohio in Baltimore during the year:

For	Anthracite	Bituminous	Coke
Track	No data	584,759	No data
Coastwise	56,887	411,390	.....
Export	924	1,478,527	74,211
Bunker .....	.....	500,882	.....
Total	57,811	2,975,558	74,211

The following tables show the coal and coke exportation from Baltimore by months and the bunker dumpings for the same ships. The figures indicate that the year's foreign cargo total would have run in excess of 2,500,000 tons had not the export ban come in November.

coal by countries:

Months	Bit. Coal	Anth. Coal	Coke	Bunkers
January	32,315	.....	1,878	22,217
February	31,858	.....	3,777	21,819
March	25,835	.....	2,333	28,636
April	76,408	90	5,886	30,926

Months	Bit. Coal	Anth. Coal	Coke	Bunkers
May	74,410	.....	4,619	45,296
June	214,656	.....	7,733	44,176
July	232,927	.....	1,269	43,535
August	255,297	.....	9,114	65,299
September	328,500	.....	7,375	77,837
October	407,382	2,259	7,154	86,792
November	35,523	91	15,937	30,099
December	2,231	.....	.....	28,338
Total	1,717,342	2,440	67,075	524,970

Country	Tons	Country	Tons
Netherlands	404,021	Cuba	58,564
Argentina	119,694	Peru	13,718
Uruguay	14,402	Brazii	46,363
Colombia	3,636	Italy	441,921
Sweden	186,193	Norway	34,725
Switzerland	216,800	Costa Rica	606
British West Indies	89	Chile	5,154
France	111,493	Ecuador	2,948
Santo Domingo	2,938	Greece	9,966
Azores	3,700	Denmark	8,286
Portugal	1,913	England	5,002
French Africa	1,607	Portuguese Africa	10,916
Egypt	6,513	British East Africa	6,174
Total .....	.....	.....	1,717,342

STRIKE HITS PRODUCTION HARD

The coal strike hit the Maryland coal production in 1919. The report for the Upper Potomac and Georges Creek regions shows one-third less coal mined last year than the average of previous years. In 1919 there was mined a total of only 4,452,899 tons as against 7,122,441 tons in 1918, a decrease of 2,579,542 tons. The Cumberland & Pennsylvania R.R. hauled 1,808,458 tons from the Georges Creek region, while the Georges Creek & Cumberland R.R. hauled 306,947 tons from the same region, making in all 2,115,405 tons. Most of this coal was delivered either at Cumberland or Piedmont to the railroads and canal, as follows: B. & O. R.R., 878,009 tons; Chesapeake & Ohio Canal, 133,571; Pennsylvania R.R., 120,448, and Western Maryland Ry., 902,713 tons.

From the Upper Potomac region 2,427,494 tons were shipped last year, or 312,089 tons more than shipped from the Georges Creek region. Of the Upper Potomac shipments the B. & O. hauled 232,918 tons; the Pennsylvania, 149,934 tons, while the Western Maryland hauled 2,044,642 tons.

The total haulage from the entire Cumberland region was distributed as follows: B. & O. R.R., 1,191,591 tons; Chesapeake & Ohio Canal, 133,571; Pennsylvania R.R., 270,382, and Western Maryland Ry., 2,947,355 tons.

From the year 1842, when 1,708 tons were mined and shipped from the Frostburg region of Maryland, to and including the year 1919, a grand total of 254,770,600 tons of coal from the entire Western Maryland region has been mined.

BOSTON MARKET IN 1919

No one in New England, either on the selling side or the buying side, seemed at all sorry when the coal year of 1919-1920 came to an end. The year, taken as a whole, was not as strenuous as the two preceding ones, but it was, nevertheless, far short of ideal and unless indications now were for more satisfactory business conditions during the coming year, many of the shippers in this market would probably fold their tents and silently steal away, for to many the twelve-

month just closed did not add much to their holdings of the world's goods.

Fortunately, however, the coal men are always looking forward to something better and although conditions are likely to continue more or less unsatisfactory for a while, nearly everyone in the trade feels that behind the clouds that obscure the horizon there is a silver lining which when brought to the front will bring about a situation that will make up for the early part of the year. Industrial conditions are such that plenty of business is assured for some time to come and the reserve stocks of New England consumers on April 1, 1920, were the lowest ever seen.

The 1919-20 year opened with conditions from the point of supply just the reverse from what was found at the close. Bituminous consumers everywhere had substantial stocks of coal on hand and contracting had not been very general, while those who had closed contracts did not desire shipments to begin at that time. It was only natural that spot demand should have been at a minimum. Consumers were strongly of the opinion that prices were about to undergo a downward revision and the coal men could not offer any convincing argument that a decline would not occur. Government prices prevailed for spot coal while on contracts, quotations ranged somewhat lower, plenty of good grade Pennsylvania coal having been available at \$2.85 net ton mines, with lower grades freely offered at a lower figure than this. What activity there was prevailed principally in the all-rail market and vessel freights on space from the south were soft, which in itself was indicative of the state of business in tide coal.

Anthracite enjoyed more activity than bituminous at the beginning of the fiscal year and the first month had not passed before big company shipments failed to satisfy dealers and demand for independent coal became good. By the end of June independent shippers were obtaining premiums of as much as \$1.25 per ton above the company circular. A brighter tone also began to develop in the bituminous end of the market about this time although it was well on to the first of August before any worth while increase occurred in the actual demand. Improvement was rapid, after it once started, however, and in the latter part of the month good Pennsylvania bituminous brought \$3.35 to \$3.50 per ton mines. Arrivals of southern coal throughout New England at this time were at a minimum on account of the marine labor trouble. Domestic anthracite further advanced and some sales were effected as high as \$7.75 mine basis.

REAL TIGHTNESS BEGINS

With the beginning of the last half of the fiscal coal year—September 1—the situation in New England began to tighten conspicuously and steadily increased until it reached its zenith in February and March, 1920. Low water supply, together with the marked falling off in receipts of southern coal on account of the continued tie-up in towboats by the engineers' strike, had caused consumers to draw heavily upon their reserve stocks and these were getting down to minimum levels to afford proper protection.

A threatened strike in the industrial situation, which would cause a very general tie-up, was threatened in September and this naturally caused everyone to proceed cautiously with the result that the demand for steam coal eased somewhat and shippers started out to close contracts for the rest of the year. Prices quoted were government maximum as a rule, although some quotations were made that were somewhat under the maximum. Arrivals of southern coal did not increase and the price held firmly on a basis of \$9.50 per ton on cars Boston. Before the month closed it became known that the general suspension in the industrial life of New England would not occur and this together with the rumors of a possible strike in the bituminous fields, encouraged consumers to endeavor to build up their reserve stocks. Anthracite continued in good

demand and prices were appreciating in a conspicuous manner, spot lots of independent coal commanding as high as \$8.50 per ton at the mines.

The reestablishment of maximum mine prices on October 30, 1920, caused a general upheaval in the New England market for the decrease in shipments on account of the strike made it necessary for the railroads to again resort to confiscations. This naturally caused much hardship to commercial consumers. Later when the preference list was reestablished the consumers classed as necessary managed to get coal, but the so-called nonessentials found it hard sledding. A very large tonnage was held up by the railroads pending the outcome of the strike and when the miners returned to work, a good part of this coal was released. This gave considerable relief to New England for the time being, but it was not long before supplies again became short.

As the calendar year closed, consumers who had contracts with shippers were getting just about sufficient coal to meet their requirements, but consumers not so protected were very hard pressed and this condition continued up to the close of the coal year. The calendar year 1920 opened with the outlook far from bright to either coal man or consumer. Production of bituminous was running considerably less than requirements and many consumers in the non-essential class could only meet their need with box-car coal, which commanded a premium over regular open cars, and with which the railroads did not bother, or with the steam sizes of anthracite. The domestic anthracite situation, however, was much easier and this condition was manifested in prices, \$8 at the mines having been the top figure obtainable for spot shipments. Pea was offering freely by the independents at company circular.

February, 1920, saw the first activities of bituminous interests towards closing contracts for the next fiscal coal year, certain shippers closing contracts that were more or less indefinite as to price. As a whole, however, contracting was light and April 1 this year probably saw as little coal actually contracted for as has ever been the case in the New England market. This is entirely, however, because of the attitude taken by the coal interests for the consumers were only too anxious to close contracts for their year's requirements.

All-rail coal is certain to play an important part in the bituminous coal trade of New England again during the coming year. In fact it looks just now as though New England consumers must depend upon rail coal to a greater extent than ever before. So long as the export demand for coal continues heavy and foreign buyers are willing to pay more money than can be realized on domestic business, southern coal interests will naturally centre their attention on export business. Of course there will be considerable tonnage of southern coal shipped to New England during the coming year, but the tonnage from the South probably will be lighter than heretofore.

New England consumes annually approximately 30,000,000 tons of bituminous. Of this amount between 8,000,000 or 10,000,000 tons come in all-rail and it is impossible to effect a very large increase in this rail movement because this tonnage represents pretty close to the maximum movement possible with present railroad facilities. The New England railroads consume about 3,250,000 tons of the all-rail receipts and with the difference in price of rail and tide coal, it may be depended upon that they will continue their rail takings fully up to this level.

Indications now are for a continued shortage of domestic sizes of anthracite well into the summer months but certain well posted interests predict that before coal burning weather arrives the situation will have undergone a very pronounced easing. Whatever the later months may bring, it is certain April 1, 1920, saw retailers all over New England anxious to get in coal to care for large and early consumer demand.

RECEIPTS OF COAL AT BOSTON: 1874-1919

Figures covering coal receipts at Boston in 1919 are an interesting commentary on the manner in which the post-armistice slump hit New England's leading coal center. Compared with 1918, the anthracite receipts showed a falling off of 216,135 gross tons, while bituminous shipments decreased 2,947,283 gross tons. The total, exclusive of Nova Scotia coals which continue as a diminishing factor, was 4,008,317 gross tons, the smallest in the history of that Massachusetts port since 1902.

The record of receipts of United States coal at Boston back to 1874 are shown in the tables following. Prior to 1888, the statistics compiled did not show anthracite and bituminous separately. All figures shown are in gross tons:

	Anthracite	Bituminous	Total		Anthracite	Bituminous	Total
1919...	1,276,404	2,731,913	4,008,317	1903...	2,151,545	2,263,729	4,415,274
1918...	1,492,539	5,679,196	7,171,535	1902...	1,015,404	2,224,508	3,239,912
1917...	1,606,088	4,413,786	6,019,874	1901...	2,126,411	2,113,302	4,239,713
1916...	1,773,495	5,024,076	6,797,571	1900...	1,938,733	2,050,500	3,989,233
1915...	1,702,402	4,680,321	6,391,723	1899...	2,166,452	1,698,105	3,864,557
1914...	1,911,525	4,919,218	6,830,743	1898...	2,185,806	1,709,169	3,894,975
1913...	1,854,450	4,991,884	6,846,334	1897...	2,023,318	1,534,886	3,558,104
1912...	1,719,132	4,539,759	6,258,891	1896...	2,156,179	1,329,083	3,485,262
1911...	1,982,940	4,171,230	6,154,170	1895...	2,516,343	940,967	3,457,310
1910...	1,826,124	4,107,294	5,933,418	1894...	2,237,599	921,883	3,159,482
1909...	1,706,659	3,495,011	5,101,670	1893...	2,221,878	1,193,896	3,415,774
1908...	1,776,401	3,302,929	5,079,330	1892...	2,065,536	870,271	2,935,807
1907...	2,053,328	3,184,964	5,238,292	1891...	2,039,443	1,070,088	3,109,531
1906...	1,659,679	2,859,844	4,519,523	1890...	1,740,564	964,857	2,705,421
1905...	1,777,398	2,798,290	4,575,688	1889...	1,647,368	914,966	2,562,334
1904...	2,002,779	2,515,490	4,518,269	1888...	2,057,259	1,004,195	3,061,454
	Total		Total		Total		Total
1887.....	2,400,000	1882.....	2,106,870	1877.....		1,274,579	
1886.....	2,500,000	1881.....	1,963,399	1876.....		1,180,204	
1885.....	2,221,120	1880.....	1,770,648	1875.....		1,233,022	
1884.....	2,201,940	1879.....	1,845,010	1874.....		1,176,954	
1883.....	2,273,068	1878.....	1,343,887				

As the bituminous tonnage was only half of the anthracite in 1888, it is probable that in the earlier years the former was relatively unimportant, for old-timers can tell of the days when all the mills that did not use Georges Creek coal used anthracite, there being very little difference in the price and Pocahontas and New River coal not coming into the market until about 1884. Nova Scotia coal has been a very variable, but in the main, a small factor.

MONTHLY COAL RECEIPTS AT BOSTON

Receipts of United States coal by months during the past three years were as follows:

	Anthracite			Bituminous		
	1917	1918	1919	1917	1918	1919
January	127,440	64,175	103,005	524,438	271,528	270,004
February	76,068	69,024	56,732	312,174	351,157	240,389
March	182,452	150,841	32,442	449,632	511,258	188,832
April	144,543	124,311	71,730	438,042	440,313	246,477
May	143,986	161,453	149,055	401,090	621,936	223,131
June	154,486	164,423	145,692	336,436	465,496	213,588
July	163,281	167,297	140,993	342,674	622,026	180,950

	Anthracite			Bituminous		
	1917	1918	1919	1917	1918	1919
August	160,320	154,768	101,357	383,057	683,407	224,578
September	156,127	137,148	127,433	309,250	553,713	225,183
October	120,931	116,419	102,222	266,461	419,614	179,699
November	107,619	92,907	127,953	424,312	461,333	264,574
December	68,835	89,773	117,194	226,220	277,415	277,613
Total	1,606,088	1,492,539	1,276,404	4,413,786	5,679,196	2,731,913

Receipts by routes and kinds of coal during 1917, 1918 and 1919 were:

	Water				Rail		
	1917	1918	1919		1917	1918	1919
Anth.	1,388,670	1,162,167	1,018,563	Anth.	217,408	330,372	257,841
Bitum.	4,153,277	5,594,626	2,612,276	Bitum.	119,991	84,570	115,637
Nova Sco.	275,612	164,081	.....	Total ..	6,154,958	7,335,616	4,008,317

NEW ENGLAND VESSEL FREIGHT SITUATION

The new conditions brought into existence during the war relative to the proportion of difference in vessel freights from the loading ports to the various discharging ports in New England, still obtain, and there is no indication and little likelihood that there will soon be a return to prewar conditions.

The former differential of 10 to 20 cents in the freight rate from Hampton Roads and Philadelphia to way down east points is still supplemented by the greater difference which had its inception during the war and which has steadily increased. On April 1, 1920, the rate to Eastport was made 70 cents above the Boston rate.

The regular big company barge rates were also substantially advanced at the same time, and instead of taking a rate approximately the same as Boston's, Bangor now commands 65 or 70 cents more and to Bath the rate is 35 cents above the Boston rate. On independent barges no established differential prevails any longer. These rates are made at the time of charter and depend entirely upon supply and demand. It can be safely figured that the recent difference of 25 cents, however, will be demanded.

The Reading rate from Philadelphia to Portsmouth is now 15 cents above the rate to Boston and the Wilkes-Barre barges from New York command 20 cents above the rate to Boston. Independent barges make rates dependent altogether upon the demand although they seldom get down to the level of the big company rates.

The towing charge on direct movement New York to Portsmouth is 15 cents above the rate to Boston.

Only bottoms of light draft, 250 to 450 tons, can be accommodated at the ports of Augusta, Gardiner, Bucksport, Wareham, Hyannis, Fairhaven and Belfast and naturally the rates to these ports are subject to a wide fluctuation, depending upon supply and demand. Calais can accommodate fair tonnage boats, but a high towing charge prevails.

Freight rates on bottoms from the southern loading ports maintain about the same difference as for the previous year, Sound ports taking a 25-cent lower rate than to Boston and Portland, and commanding 15 cents above the Boston rate. Rates from Philadelphia on independent boats are about the same as from Hampton Roads.

THE TRADE AT BUFFALO IN 1919

The coal trade as a whole was satisfactory to nobody during the past year. Probably the bituminous jobber was worst hit of anyone, but producer and

consumer alike had difficulty. If it was not lack of supply it was advance of price or poor quality that confronted the consumer, and the producer complained alike of shortage of cars and price regulations that embarrassed while they often failed to regulate.

A visitor to the city coal offices of any branch of the trade or any volume of business done heard little but complaint, sometimes of the natural conditions, but oftener of the handling of shipments as made possible by the movement of cars or the rules laid down by the government authorities. It is pretty well agreed that any sort of restriction or public regulation, except in case of sharp emergency, is no help to the trade and often of no help to anyone. So the coal shipper was inclined to long for the time when supply and demand were allowed to regulate trade.

In view of the fact that coal has been so scarce for some time it is not easy to remember that during a part of the past summer Allegheny Valley coal sold below the government maximum and the bituminous trade generally was dull. As the year proceeded and cars grew more hard to get, the conditions began to be strained till finally the restrictions were put on again and a sort of industrial martial law was instituted. The trade submitted for a time, but there was soon report of exceeding the regulation prices in many directions.

The anthracite situation somehow was not so strained as the year came to a close as it had been. While the lake season was on it was felt that all the coal that could be spared ought to be turned into that trade and it looked as if Buffalo was going to suffer. It happened, though, that more coal had been sold through the summer than the consumers realized, so that as soon as the lakes closed the coal flowed in and satisfied all demand quickly, much as it had done the previous year. At the same time it is felt more and more every year that anthracite is becoming a luxury and big prices must hereafter be paid for it.

As a whole the status of the Buffalo trade in either branch has not changed much. Difficulties multiply, the natural gas substitute runs low and everybody is apprehensive of the future, but there is still the possibility of it all being smoothed out. Perhaps trade is merely partaking of the general world unrest and uncertainty.

The destinations of anthracite shipped by water from this port last year compare as follows with preceding years, as per custom house report, in net tons:

To	1914	1915	1916	1917	1918	1919
Chicago	1,119,980	901,450	598,500	893,175	686,153	997,640
Milwaukee	565,400	721,884	415,400	740,100	668,144	751,550
Duluth	399,427	385,569	327,650	584,750	403,403	521,618
Superior	1,273,136	1,219,834	735,521	1,127,550	1,250,953	1,077,152
Other U. S. ports..	499,912	446,000	409,979	432,195	450,150	446,098
Total	3,857,855	3,674,737	2,487,050	3,797,770	3,281,553	3,794,058

The 1919 lake shipments to other ports, including Canada, which latter are confined to Fort William, 252,917 tons; Port Arthur, 90,600 tons, and the Canadian Sault, 18,050 tons, were, by receiving ports, as follows:

Port	Tons	Port	Tons	Port	Tons
Canada	361,567	Marquette	25,600	Port Huron	3,100
Sheboygan	101,961	Hubbell	23,000	Marinette	3,000
Green Bay	63,935	Sault, Mich.	16,300	Calcite	2,300
Waukegan	50,600	Houghton	11,600	Cheboygan	1,200
Manitowoc	34,000	Portage	11,200	Kenosha	1,100
Ashland	32,886	Washburn	6,300	Lake Linden ...	1,000
Hancock	29,200	Menominee	6,000	Mackinaw	800
Racine	26,900	Escanaba	5,585	St. Ignace	400

Giving a grand total for all receiving ports of 4,156,118 net tons. Canadian ports are reduced in number, domestic ports being about as formerly.

Historically the business of the port has been about as below, the receipts being estimated in the absence of official figures:

Shipments by Lake	1914	1915	1916	1917	1918	1919
Anth., net tons	4,285,228	3,864,072	2,800,740	4,137,904	3,594,803	4,156,118
Receipts by Railroads						
Anth., gross tons	6,300,000	6,300,000	6,000,000	6,500,000	6,000,000	6,000,000
Bit., net tons	8,000,000	8,500,000	8,000,000	9,000,000	9,000,000	8,500,000

RAIL AND WATER SHIPMENTS TO CANADA

Following is a comparative statement of shipments to Canadian points, rail and water, as reported by Collector of Customs, in gross tons:

Year	Anthracite	Bituminous	Coke	Total
1912.....	1,234,564	2,609,702	423,524	4,267,790
1913.....	1,615,176	2,906,682	475,417	4,997,275
1914.....	1,495,467	2,533,888	338,527	4,370,882
1915.....	1,660,598	2,229,313	418,917	4,308,828
1916.....	2,095,355	2,473,787	447,984	5,017,126
1917.....	2,911,208	3,021,403	373,042	6,305,653
1918.....	2,331,662	3,591,277	517,296	6,440,235
1919.....	2,341,091	2,193,852	191,842	4,726,785

Water shipments to Canada were 580,151 tons in 1913; 472,393 tons in 1914; 209,305 tons in 1915; 313,690 tons in 1916; 340,134 tons in 1917; 313,250 in 1918 and 361,567 tons in 1919.

Following were the range of quotations per net ton of soft coal at Buffalo for the year:

	Three-quarter	Mine-run	Slack
Pittsburgh and No. 8	\$4.50	\$4.25	\$4.25
Reynoldsville	4.70	4.25	4.25
Allegheny Valley	4.70	4.25	4.25

The prices of Reading hard coal and intermediate white-ash coals at Buffalo were as follows:

On cars at Buffalo or bridges, gross tons: Broken (grate), \$8.93; egg, \$8.95; stove, \$9.20; chestnut, \$9.30; pea, \$7.50. These prices are made up by adding the rail freight, which is \$2.60 per ton on the larger sizes and \$2.20 on pea from the mines, all coal now being sold at the mine prices. December prices are given. Other anthracite sold at substantially similar figures.

THE BUFFALO MARKET DURING 1919

Prices of bituminous coal, coke, etc., per net ton, during 1919, were as follows:

	Jan.	Feb.	Mar.	Apr.	May	June
Pittsburgh and No. 8:						
Lump and three-quarter	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50
Mine-run and slack	4.25	4.25	4.25	4.25	4.25	4.25
Allegheny Valley Thin Vein:						
All sizes	4.70	4.70	4.70	4.70	4.70	4.70
Smithing and Smokeless (Mostly Cambria County):						
Slack basis	5.70	5.70	5.70	5.70	5.70	5.70
Cannel, to dealers, domestic sizes	6.75	6.75	6.75	6.75	6.75	6.75
Cornellville Coke:						
72-hour low sulphur foundry	9.60	9.60	9.60	9.60	9.60	9.60
48-hour high sulphur furnace	8.60	8.60	8.60	8.60	8.60	8.60
Pittsburgh and No. 8:	July	Aug.	Sept.	Oct.	Nov.	Dec.
Lump and three-quarter	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50
Mine-run and slack	4.25	4.25	4.25	4.25	4.25	4.25

THE COAL TRADE

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny Valley Thin Vein:						
All sizes	4.70	4.70	4.70	4.70	4.70	4.70
Smithing and Smokeless (Mostly Cambria County):						
Slack basis	5.70	5.70	5.70	5.70	5.70	5.70
Cannel, to dealers, domestic sizes	6.75	6.75	6.75	6.75	6.75	6.75
Connellsville Coke:						
72-hour low sulphur foundry	9.60	9.60	9.60	9.60	9.60	9.60
48-hour high sulphur furnace	8.60	8.60	8.60	8.60	8.60	8.60

This table is to a great extent a reminder of the old days when prices varied in a legitimate way and could be quoted in a varying scale from month to month, but during the past year government figures have been the only authority. The regulation prices were suspended February 1, 1919, and though they were not in force long they were made the basis of all prices till there was a prospect of a sharp advance in October, when the government prices were resumed, to remain to the end of the year and further. Some Allegheny Valley coal was sold below the quotation during the summer and before the end of the year there were those who were bold enough to disregard the prices and sell \$1 or more above them. Coke has also been advanced over the regulation prices.

Coal shipments through lock No. 4 on the Monongahela River amounted to 11,907,020 net tons last year, as compared with 10,709,720 tons in 1918.

CHICAGO COAL TRADE IN 1919

The year opened with the situation in better shape than at the close of 1918. On the best grades of Illinois and Indiana coal government maximum prices were maintained, with lower grades weak. Anthracite was scarce but coke was plentiful. Southern Illinois mines were running only about half time, operators in other western districts continuing on a two to three day basis.

Alarmed by reports of early modification of the zone system, the Chicago Coal Merchants' Association adopted a resolution protesting against any change until April 1 for the stated reason that eastern coal reaching this market before that time would bring disaster to the large number of retail dealers heavily stocked with Indiana and Illinois coal. The sudden cancelation of the zone system, which nevertheless followed, came as a bombshell to an already nervous community. Prices on western coals slumped, and the end of January saw conditions demoralized. The weather continuing unseasonably warm, retailers made little headway in disposing of large stocks of western coal. The Fuel Administration figures on January 1 showed over 850,000 tons of soft coal in storage on that date. This figure was reduced very little during the month.

February business opened dull in both domestic and steam coal. Chicago retailers agreed to purchase no eastern coal of any kind for 30 days until the heavy stocks of Indiana and Illinois were cleaned up. Southern Illinois producers advanced prices 20 cents per ton for February shipment and offered lump, egg and nut at \$2.75 mines. During the second week of the month colder weather enabled retailers to increase deliveries of domestic coal. Trade in country towns west of Chicago was dull. Anthracite was a little more plentiful, and eastern coal began to worm its way into the market. Mild weather continued to be the main factor in market conditions throughout this section and retailers had little opportunity to dispose of the large accumulation of coal stored under advice of the Fuel Administration. Lake Michigan docks carried big stocks and movement of coal dwindled to almost nothing.

MARCH DEMAND SHOWED SMALL SPURT

Cold weather just prior to the advent of March served to clean up some of the retail stocks. The call for eastern coal, however, was weaker than had

been the case for the previous two or three weeks, due to the mild winter weather and the approach of the spring season with prospective changed prices. Hocking and West Virginia splint shippers seemed willing to confine shipments of their coal to points east of Chicago. Illinois mines continued to average two or three days a week running time. A heavy snowfall the second week of March, together with a day or two of colder weather, quickened the demand for domestic coals and brought retailers to a realization that winter had not ended. Prepared sizes of smokeless were exceedingly scarce. Railroad movement was decidedly slow, coal from eastern producing districts consuming from ten days to two weeks in transit. Industries were running on reduced schedule with from 60 days' to four months' supplies on hand. A slump in market prices on several grades of domestic and steam coal featured the last week of March.

Railroad movement showed improvement in April. A general improvement in market conditions also occurred, resulting in a strengthening of prices, particularly of certain eastern coals. Chicago and the West faced a shortage of prepared smokeless coal and prices advanced from 25 cents to 50 cents a ton, with most of the larger producers withdrawn from the market. It became impossible for the trade to secure Pocahontas or New River lump and egg in any quantity, and what little tonnage was available was strong at \$3.50 to \$3.75 mines. Indiana and Illinois producers still had difficulty in disposing of production in the face of eastern coal competition. The market continued to show improvement, raw wet weather helping materially from a domestic standpoint. Running time in Illinois and Indiana was about 40 per cent., with little activity in contracts.

INCREASED EASTERN DEMAND TONES UP MARKET

An increasing demand for prepared coal from eastern districts gave a much better tone to the May market. Industries, while still carrying considerable stored coal, were negotiating for future purchases, but plants around Chicago played the market and picked up cheap coal of whatever grade obtainable. This demoralized the screenings market. Railroad movement was good and no complaints were heard on car supply in the western districts, although some of the eastern producers began to feel a tightening up in the general car situation. A heavy demand for Pocahontas contracts was exhibited. Illinois and Indiana shippers did a good business in dock territory due to the prospective rate advance on June 1. Large tonnages were reported moving into the Wisconsin steam territory, much to the chagrin of the dock shipper.

With midsummer temperatures prevailing June saw the usual shortage of day labor. This slackened the demand for domestic fuel; and although smokeless operators were running to full capacity, contract customers were in no way anxious for full quota shipments. As the month wore on the labor situation in the retail yards became worse and numerous complaints were heard over the problem of getting men to unload coal. The steam market continued sluggish, southern Illinois fields reporting a slight increase due to proposed increase in freight rates to Northwest points on Illinois coal. Anthracite shippers were still far behind on contracts.

The lull in the demand for domestic coal continued through into July. Railroad movement was poor and numerous complaints were heard over delayed arrivals and bunched shipments. Later an improvement in market conditions became noticeable, especially in steam sizes which had been in relatively poor demand for the previous three months. The domestic market showed steady improvement, both on eastern and western coals. This condition, together with the strengthening demand for steam sizes, gave the Illinois and Indiana operators better running time than had been the case for a number of months.

SUPPLY BECOMES PRIMARY QUESTION

By August the market on domestic coals had reached a point where price was of secondary importance. The question of adequate supply was the prime object of the retail dealers, especially those who ordinarily depend on high-grade eastern coals for domestic purposes. Such coals as Pocahontas, New River, splint, Hocking and eastern Kentucky in prepared sizes were extremely scarce, with prices advancing rapidly. High-grade smokeless lump sold to the jobbing trade as high as \$5 mines. West Virginia splint went to \$4, Hocking lump to \$3.40 and \$3.50 and eastern Kentucky was sold to country trade west of Chicago as high as \$4.25. Contract shipments of smokeless run-of-mine were far short of requirements, with customers pounding the shippers for additional tonnage. The labor situation and general feeling of unrest slowed down transportation.

A decided change was noticeable the first half of September, brought about by a heavy movement of smokeless mine-run to Chicago by both producers and jobbers. Retail demand slowed up considerably with dealers complaining of difficulty in securing delivery orders. Conditions in the smokeless market gradually returned to normal, however, and spot prices on Pennsylvania and Maryland low volatile mine-run strengthened.

Continued scarcity of all grades of domestic coal ushered in October. Car shortage was a vital feature in all producing districts, even Illinois and Indiana shippers losing headway on account of lack of cars and curtailed production. Colder and more seasonable weather failed to affect the demand for domestic to any extent. The demand for gas lump was quite brisk, but very little tonnage was obtainable. With talk of a prospective miners' strike November 1 the spot market tightened perceptibly. Practically all spot offerings of eastern domestic coal were withdrawn, and while prices did not advance with the increasing demand, this was accounted for by fear of government price regulations. Car supply in Illinois and Indiana continued poor and hindered production to such an extent that most southern Illinois operators discontinued the acceptance of new orders.

MARK TIME DURING NOVEMBER

Shippers marked time the first week of November eagerly watching developments in the strike situation. Distribution of transit shipments was handled entirely by the Regional Coal Committee. Industrial plants were on the anxious seat, especially those that had not provided for storage of reserve supplies. With the strike order canceled the second week of the month and miners in some districts reported going back to work, there was a better feeling among operators and shippers notwithstanding the fact that Illinois and Indiana miners were showing no inclination to resume work without further agitation. Retailers in the Chicago district were well supplied and, contrary to expectations, the demand for fuel on the part of the consumer was actually below normal for this season of the year. By the end of November industries were running short of steam coal and some plants closed down. Confiscations by railroads became more numerous.

As the closing month of the year dawned the question of coal supply throughout the West became more and more critical with each day's delay in the settlement of the strike. Chicago was put on a complicated basis of conservation with the Public Utilities Commission and the Regional Coal Committee in complete charge. Orders were in effect shortening business hours to six and six and one-half hours for essential industries and no hours at all for the non-essentials. Office buildings were prohibited from furnishing heat and elevator service except between the hours of 9. a. m. and 3.30 p. m. Retail stores were

put on a noon to 6 p. m. basis, which, together with curtailed transportation service and elimination of all electric display lighting put Chicago on a footing much more stringent than during war time.

Conditions slowly returned to normal after the worst mix-up ever experienced in the coal trade. Railroad confiscations and diversions, on authority of the government, had produced a situation which from the standpoint of accounting has never been equaled.

CINCINNATI COAL TRADE IN 1919

For the past five years each coal trade review has had some factor to record which, in any other line of endeavor, would have been almost fatal to the business, but which has been accepted as matter of fact in the "coal game," and which only tested the metal of the coal men. Stagnation from overproduction, overproduction from overstimulation, interference by courts and strikes, government intervention and operation, stagnation due to railroad inefficiency, Fuel Administration benevolent assimilation, price restriction, catering to labor, cut-throat competition, and a thousand and one, or more, factors dropping in one by one, or two by two, sometimes in greater numbers, all had to be contended with from one to two years before the World War, and all through that nightmare period, and coal men seemed to have had to bear the brunt of it all.

Nothing kind can be said of 1919 by the coal men except that at the close of the year, and at the end of the season, March 31, 1920, probably more profits developed to the great majority of coal men than had been expected during the strenuous months of the year and season. The beginning of the year seemed easy; coal demand had abated and it looked as if a fine supply of fuel had accumulated. The armistice had been signed November 11, 1918, and industrial plants took the erroneous view that it would be a long while before they would need fuel and that it would be at a very low price when needed. The market had been soggy in December, 1918, and a period of waiting seemed to be on, "watchful waiting," as it were. Labor had taken two weeks' holiday over the beginning of the calendar year and a blizzard opened up the early days of the first month. Difficulties with the railroads owing to some foolish and restrictive rules in reference to furnishing cars ushered in the year. The car situation was better in some respects, but floods and land slides in West Virginia curtailed production. The market remained spotty through the month, splint coal being handicapped by a glut, in their market, of inferior coal piled up under war conditions and the smokeless business was injured by the zoning system and hundreds of permits were asked for moving coal out of zone. These restrictions were in force during the first month of the year but were removed February 1, 1919.

The market began to soften toward the last of January, and in February and the first let-down in smokeless demand developed toward the latter part of that month. In this month prices for Kentucky coal were around \$1.50 to \$2.25 mine-run basis, and \$1.60 to \$1.75 for nut and slack. Business was improving slowly at the close of the month, pressure was beginning on railroads, and contracts covering 500 to 300,000 tons were being reported freely. In Kentucky contract prices were based on mine-run \$2.25 to \$2.45, smokeless \$2.75 for mine-run and \$3.25 for lump and egg, and West Virginia on a basis of from \$1.75 to \$3 mine-run basis, the latter for special brands of product. The first quarter of the year closed with market and delivery slightly better and with prospects brightening but with dissatisfaction abroad at the actions and high-handed rules of the Fuel Administration.

OVERPRODUCTION CHECKED AT BEGINNING OF SECOND QUARTER

At the opening of the second quarter domestic stocks were growing less and mines had been checking over-production by closing down in sections. Pocahontas coal mining companies raised the price of their coal 25 cents to \$3; splint companies announced \$2.80 for lump for April; May, \$2.85; June, \$2.90; July, \$3, and \$3.10 on the rest of the season. Lake coal began moving in April in small amounts although navigation had not yet opened. Big buyers were returning to their former coals of which they had been deprived by war conditions. Many operators ran into a condition in which large tonnages of inferior coal piled up by manufacturers were left on hands of the buyers and their contracts under which they felt called on to get a surplus had been abrogated by the armistice the previous November. Nevertheless business opened fairly well in the way of contracting and but for the muddling of government contracts and fuel diversions the quarter would have swung business into a broad channel. The lake movement developed slowly owing to a surplus of supply and the changed policy of the lake buyer who was said to be holding back in hope of breaking the market, but he almost lost out later in the year for this policy, and paid for it dearly by a scramble for fuel at a dollar higher than he would have paid if he had used this interim to increase his reserves on the docks.

The domestic trade opened up well in the second quarter, but industrial demand was very weak, the manufacturers not having adjusted themselves to the peace conditions suddenly thrust upon them. Smokeless coal began to rise and sales of lump were reported as high as \$4 f. o. b. mines. Toward the last of the quarter improvement was noted in orders and in demand and splint prices began to rise. One hundred car orders began to come in and distributors began to be optimistic. These orders, however, were limited to domestic sizes and trouble began to be experienced in getting rid of the resultant mine-run and nut and slack.

Labor was becoming more and more scarce and rumblings of trouble among the miners began to be heard. The car supply grew in importance at the close of the half year, and contracting was slow. Export demand broadened out and took in smokeless and splint coals and much of the surplus production went to the seaboard for foreign shipments. Prices were firm and sentiment was much firmer and broader at the close of the half year. The operators and distributors became somewhat independent about this time and preferred contract, month by month, or delivery at current market prices. Smokeless coal had struck its regular gait, but splint was lagging. The half year closed with a car shortage, a shopmen's strike on the N. & W., and demand rising in all lines.

GOOD BYE, MISTER BARLEYCORN

Early in the third quarter production was disturbed by the holidays and the funeral of John Barleycorn, almost all the miners attending the latter and prolonging the former as long as possible. At the close of July price levels, advanced sharply during the month, were at high tide, ranging from \$4.30 to \$3.50 and down as low as \$2 to \$2.75 for mine-run. Tidewater demand was strong and the government and railroad requisitions for smokeless coals made the product scarce in the interior and enhanced the price very much. Throughout the quarter the railroad situation was uncovered more and found to be inefficient and insufficient. A winter fuel famine began to loom up in the minds of coal men, and they were seriously uneasy at the slowness of railroads handling their product and the insufficiency of labor and the deficit in surplus that was beginning to show. A runaway market was feared although a few jobbers pyramided prices and took advantage of the necessities, especially of industrial plants, and unloaded inferior coal at superior prices. Reports began to show that many companies were well sold up nearly to the end of the year of possible production

and many had to turn down offers to take coal at any price the producer might name. Conservative producers were holding prices well down but the necessities of the consuming public were such that almost any price could be secured from \$4.40 for splint block to \$5 for smokeless of doubtful grade.

TIDEWATER DEMAND REVEALS CAR AND LABOR SITUATION

Toward the close of the third quarter tidewater demand furnished relief and brought out the weakness of the labor supply and the car distribution. But hard pushing and constant watchfulness did wonders for the coal companies which managed to expedite production and shipments and thereby register a good paying business. Domestic demand, awakened by memories of the situation in previous years, grew heavier, and the storing of fuel in cellars proceeded rapidly. Those who were waiting for smokeless coal became weary and many stocked up on splint coal, aiding disposition of the large sizes and giving a chance to meet the increasing demand for steam coal. Toward the close of the quarter fears of a general famine began to subside, although it was recognized that there would certainly be a shortage of fuel in spots during the coming winter. Operators had to fight unceasingly for cars and had to watch labor closely to get work in proportion to price expected. Buyers were bidding against each other and prices were continually edging upward.

Strike talk assumed large interest in the first month of the last quarter of the calendar year and operators slowed down extensions and were not eager for new orders or contract making. The navy requisition for 750,000 tons of smokeless coal seemed to preclude any of that coal for domestic use. Many New England dealers then went into the field for splint coal, but were unable to contract for much because of the imminent strike. Labor indifference to production became manifest in the latter part of the year and reports of from 20 to 45 per cent. idle miners, when they were needed most, were made from various mining regions.

The strike materialized around the first anniversary of the armistice in the World War, November 11, and the Fuel Administration was again brought into being. Nonunion mines were, from that time on, the principal source of supply until members of the U. M. W. were compelled to go to work again by order of the government, or by collapse of the strike. Cold weather brought many applications to the fuel committees in this section and diversions to this and that complicated matters to an extreme degree. The closing of the year noted rationing of coal by distributing committees and dissatisfaction on the part of dealers who had contract coal and who could not get it because of diversions. Fuel was seized and sent south, north, northwest, just where the cars were held and prevented from returning or were so far diverted that it took months for them to return. The year closed with chaotic conditions, paralyzed, the distribution in hands of the railroads, Walker D. Hines having been named fuel director when Dr. Harry Garfield resigned about the middle of December, and the miners' strike fell flat and miners returned to work after a 14 per cent. advance had been granted. Zero weather, car shortage and coal shortage, bad gas supply, all dropped down on the closing days of the year.

The new year 1920 opened with unpleasant prospect, production curtailed by a lingering return to work after holidays, industrial plants closing and the first effects of the wandering of cars in the Northwest when they should have been in the coal regions. Collections from diverted coal became a distressing factor almost preventing coal companies, even of big resources, from being able to meet payrolls. Added to this a movement by the Federal Reserve banking system to deflate currency, shrink credit and curtail loans prevented free borrowing, and there came a period of slow production. Strange to say, about this time came congestion at the terminals in several large coal distributing points

in the western and central districts and almost a famine in fuel resulted in some parts of the country. About 3,000 cars of Cincinnati billing got lost and railroads returned lists of numbers for disclosure of destination.

In February diversions of coal continued and distribution was attended by cases of closing down with plenty of coal in reach, but under direction of the regional coal committee, and no method whereby manufacturers could get their own coal. The distribution question remained as complicated as ever to the end of the month, car shortage, laggard payments by railroads diverting fuel, confiscation by railroads themselves and all sorts of interference hampering the conduct of delivery and even the matter of mining. In March, matters were little better and yet production improved in some respects. Toward the close of the month the report of the Bituminous Wage Commission and the announcement that on and after April 1 governmental restrictions would be off and price regulations cease brought some sunshine, and a belief the prices would at once jump to a high point prevailed.

COAL TRADE AT CLEVELAND, OHIO

Any "graph" of the 1919 coal trade, as viewed from the standpoint of Cleveland operators and shippers, would so closely resemble a profile map of a transcontinental railroad as to defy a Union Pacific engineer to distinguish his own property. There never was a month when the four necessary factors to successful and profitable production, transportation and selling of coal functioned. If there were miners ready to mine and cars ready to carry the public was in no mind to purchase. If the campaign to remedy this evil, which marked the first three months of the year, produced results, the car supply gave out. If railroads furnished cars and the public was still anxious to buy, the miners were out on strike.

During January, February and March there was a fair supply of empty cars in Ohio. The public, however, having made extensive purchases of coal in the previous fall, was not in the market for more. Then came April and the opening of the lake navigation. For a month there was considerable activity and the first month of navigation saw something like 1,082,000 tons of coal sent forward. Cars, however, soon became inadequate. Hundreds of cars out of repair and the new arrivals were not equal to the increasing number of "bad orders."

Thus May passed and then things began to happen. Strikes were the order of the day and they continued so to the end. They began down on the Norfolk & Western R.R. with a shopmen's walkout. This lasted for ten days, to the great detriment to lake coal shipments, and was followed in the same month by an outbreak among the Canadian dock men and shipments for Canadian ports were blocked for another ten days. The July lake shipments picked up again and by the end of that month 13,181,023 tons of cargo and fuel coal had been handled on the lake docks, as against 11,858,901 for the same period in 1918; 10,009,257 in 1917; 11,826,173 in 1916, and 9,205,181 in 1915.

This was the peak of coal shipments for the year. On August 1 the dock men at the Head of the Lakes went out, while down the lakes a railroad shopmen's strike similar to the Norfolk & Western affair tied things up. Miners and public were in harmony, but transportation again fell down. On September 1 the Cleveland dock men went out for a week's vacation and on the 22nd of that month the great steel strike fiasco was set off. Industries closed and industrial chaos ensued. In the meantime the lake navigation was practically closed. The total figures as shown in detail elsewhere were 22,750,392, as against 29,388,242 in 1918; 26,828,736 tons in 1917; 24,692,936 in 1916, and 21,507,374 in 1915.

On November 1 the bituminous coal strike was begun and lasted till December 12. Winter had already set in. Transportation was practically at a standstill and conditions not far different from the "fuelless days" of the war brought on a "winter of discontent" and closed a season marked by more eventualities than any year within a previous decade.

Locally the last year 1919 was about as rough on land as it was on lake. Various campaigns for "buy-your-coal-early" were instituted by private advertising, and by notices sent out through the authority of the Retail Coal Dealers' Board of the Chamber of Commerce. This very active organization, which has done much to iron out discords among local coal dealers, spent most of the winter endeavoring to protect the local consumers against the results of their own folly in not obeying the warnings sent out the previous fall.

Monthly receipts and shipments for 1919, as compiled by the Cleveland Chamber of Commerce, show the following:

Month	Receipts		Shipments		
	Rail	Bitum.	Rail	Bitum.	Lake Bitum.
January	30,973	491,794	248	2,674	.....
February	6,957	363,289	46	1,901	.....
March	18,953	595,362	168	384	.....
April	86,957	57,691	...	584	71,391
May	30,079	419,657	...	743	226,656
June	12,141	962,919	...	73,845	241,475
July	39,683	398,491	594	29,201	236,446
August	16,636	277,476	20	39,768	289,440
September	37,503	40,025	6,043	55,641	145,590
October	98,811	1,488,495	2,895	117,065	262,264
November	22,123	464,310	124	684	35,308
December	38,211	335,104	51	1,719	.....
Totals	439,027	5,894,613	10,189	324,209	1,508,570

Coke receipts and shipments during 1919 were as follows:

	Receipts	Shipments		Receipts	Shipments
January	6,780	8,551	August	15,746	22,472
February	11,780	106,779	September	11,831	20,479
March	112,466	9,221	October	27,894	6,380
April	29,541	7,285	November	14,757	13,449
May	15,608	1,341	December	17,729	20,346
June	11,503	9,463	Totals	316,458	239,075
July	40,823	13,309			

COLUMBUS MARKET IN 1919

The year 1919 was a peculiar one in the coal trade in Columbus and Ohio territory generally. Uncertainty prevailed for the greater part of the time and in no wise was the year similar to any that preceded it in the past decade. The year opened with heavy reserve stocks in the hands of consumers, which, coupled with a mild winter, caused a lull during the early months. This quietude continued until in May when a buying spurt started and continued for the rest of the year.

The closing months of the calendar year were characterized by the strike of more than a month in length when there was complete stoppage of work in Ohio except at certain stripping operations. Following the strike the demand was extraordinarily strong, but the imposition of federal prices prevented any advance in quotations. In fact the prices at the close of the year were much lower than just previous to the suspension.

Mining operations during the year were not nearly as large as in 1918. Estimates made by the mining department of the Ohio Industrial Commission show that approximately 33,800,000 tons were mined. This is a falling off of more than 14,000,000 tons over the previous year, when the output was 47,894,236 tons. The largest previous production, except in 1918, was in 1917, when 41,677,986 tons were mined.

On the whole the trade was not prosperous for either the shipper or producer. For the retailer the year was fairly good, although short stocks and submission to federal regulations also reduced profits in the retail end of the business. For the operator it was not a good year and in some instances producers were on the losing side of the ledger.

Car shortage caused a falling off in production towards the latter part of the year when the demand was the best. Earlier, when there was no market or restricted market, production was curtailed to a large degree. Not many new operations were started and development work was almost at a standstill.

The lake trade was fairly active, although the tonnage moved from Ohio fields to the lakes was not nearly as large as in 1918. Towards the latter part of the season the lake movement almost ceased, two months before the usual close of navigation. This was due to car shortage and the long strike suspension.

THE DETROIT COAL TRADE IN 1919

For jobbers and branches of the coal trade represented in Detroit, the coal year ended March 31, 1920, was largely a succession of discouraging developments and disappointing struggles to overcome handicaps imposed by federal control of transportation and federal regulation of the coal industry.

Though open market conditions prevailed at the opening of the 1919-20 coal year, wholesalers in the Detroit market were under the incubus of the recently suspended activities of the Fuel Administration. Yards of retail dealers and the reserves of industrial plants were burdened with a heterogeneous accumulation of bituminous, much of which was unsuited to the requirements of the retailer's customers or the needs of the steam coal user. In the yards of many retailers were great piles of slack and run-of-mine, which were better adapted for steam plant consumption than for the domestic heating plants, while stock piles of manufacturing plants were frequently holding coal that domestic buyers could use. In the case of both the retailers and the industrial plants, however, there was the unfortunate circumstance that much of the coal on hand was of inferior quality, stock that had been zoned into Detroit by the Fuel Administration from producing districts that normally contribute little to the city's supply, but which, under the stress of war conditions and the urging of the government was accepted by the retailers and the steam plants.

These burdensome stocks carried over from 1918 were an effective barrier against development of normal business in the earlier months of the year despite the fact that jobbers and wholesalers were able to offer their customers the coal of better quality that constituted the city's supply prior to the inauguration of the zoning system. There also was apparent among buyers a general tendency to hold off in expectation of lower prices. With storage space occupied and working capital tied up, neither the retailers nor the steam plants offered a receptive market for further supply. In consequence business proceeded sluggishly through the early part of the year and well into the fall, when it received some stimulus from the impending and later materializing strike of the bituminous mine workers. Efforts to increase stocks on hand in preparation for the strike were only in part successful, as, because of the inactive demand earlier, the output of mines had been greatly curtailed and mine reserves were lacking to fill the accumulation of belated orders.

CONFISCATIONS CUT SUPPLY OF DESIRED GRADES

Detroit consumers found also that the coal they were striving to obtain was being seized and diverted for use of the railroads, which under federal management had been restrained from making proper provision for their fuel requirements and were forced to make good the deficiency by confiscating shipments consigned to other buyers. The outcome was that many of the Detroit buyers who had delayed stocking up in the expectation that they would be able to buy coal more cheaply late in the year were inadequately provided for when the strike became effective. But for the fact that shipments continued to arrive from certain non-union districts, considerable hardship and probably suffering would have been caused by the strike.

The restoration of the functioning of the United States Fuel Administration and the resumption of government fixed prices and margins brought added difficulties for wholesalers and jobbers attempting to supply the Detroit market. The limited supply of bituminous available during and after the strike was productive, however, of one good result in that it led to the elimination by consumption of the huge stocks of inferior coal that burdened the market earlier in the year, much of the stock in retailers' yards having been withdrawn to meet the requirements of steam plants.

Following termination of the strike, railroad confiscation continued as an annoying factor in the market. The shortage of car supply which had been troublesome through the fall became more pronounced and additional transportation difficulties developed in the form of embargoes due to congestion of traffic in the Toledo terminal through which nearly all coal for Detroit and Michigan is handled. Since January 1, 1920, Detroit's bituminous supply has been wholly uncertain and continually menaced by the confiscation process of the railroads. Efforts to obtain relief from Washington were met with apparent indifference and the cheerless information that no assurance could be given that coal would be supplied Detroit in sufficient amount to meet requirements of the city's industrial plants, though it was believed domestic consumers would be cared for.

Action by President Wilson in removing the government fixed prices on the eve of the new coal year was an encouraging development in the opinion of local jobbers and wholesalers, who welcomed the termination of the margin limit of 15 cents, which the Fuel Administration reimposed at its rejuvenation, wholly ignoring the fact that the jobbers' expenses and costs had risen to a much higher level than that prevailing when the margin was first fixed two years ago.

While the anthracite supply throughout the year was almost continuously at a low level, the fact that a large proportion of the domestic consumers stocked up during the earlier months of the coal year served to relieve the strain in the later months and made it possible for the retailers to provide in most cases for the reasonable requirements of their customers.

THE YEAR AT SUPERIOR-DULUTH

Coal dock operators at the Head of the Lakes did not repose on a bed of roses during the 1919 season and the winter of 1920. They were confronted with one difficulty after another and it required careful management on the part of the trade to round the corner without sustaining operating losses on the general result. To begin with, heavy tonnages of bituminous and fair quantities of anthracite coal were carried over at the opening of the new coal year on April 1, 1919. Operators found it a difficult matter to obtain bookings for any quantity of coal during the spring months, as retailers over the territory held back from contracting for their season's requirements in the expectation that

price recessions in the market would come about later. Dock men were also called upon to meet cuts over a part of their territory by interests bringing in coal through Lake Michigan ports who could lay it down cheaper over the ground tributary to them. Demand for coal from over the Minnesota iron mining districts was also abnormally light owing to the backwardness of the ore shipping season.

Despite all those drawbacks the trade was beginning to get into its stride when a general strike first of railroad shopmen and immediately following of coal dock operators developed at Superior and Duluth, completely tying up all the coal-handling plants as far as shipments in carlots to points over the Northwest were concerned. During that six weeks' period a large fleet of coal carriers was tied up in the Duluth-Superior harbor and in the end some of the boats went over to the Canadian Head of the Lakes to discharge their cargoes. The effect of that strike was felt during the balance of the year in the loss of receipts, as tonnages of anthracite coal that had been marked for the Northwest were diverted elsewhere. On top of all those trade tribulations there came along the strike of bituminous miners on November 1, resulting in the handling and control of dock shipments reverting to the United States Fuel Administration up to around December 10. During that period large tonnages of bituminous coal were shipped to points outside of this territory under orders from the Regional Fuel Administrator and the use of hard coal was extended to take the place of soft coal in some quarters.

That, with the severe winter weather lasting well into February, was accountable for a shortage of anthracite developing at the docks early in March. Prior to that operators sacrificed considerable trade through being compelled to refuse orders other than from their regular customers in the effort to carry along to the limit. It may be mentioned though that as an offset, the trade was given an agreeable surprise in soft coal shipments being on a sufficiently heavy scale to enable the cleaning up of heavy stocks on the docks whereas it had been expected that considerable tonnages of it would remain on hand at the opening of the 1920 navigation season.

CAR SUPPLY PROVES INADEQUATE

Another drawback that will never be forgotten in trade circles was the difficulty experienced in obtaining cars for making shipments from the docks during the late fall and winter months. Dock men were compelled to rely to a great extent upon iron ore cars. It is conceded that had the cars been obtainable when wanted the stocks of hard coal on the docks would have been exhausted early in February, 1920, as dealers had sufficient advance orders booked to account for all the supplies brought up.

Unless unforeseen difficulties arise, dock operators at the Head of the Lakes are looking forward to a busy season during 1920. It is predicted that if the coal is available at the mines, and the railroads at Lake Erie ports are prepared to deliver it to the docks, receipts for the year may exceed 10,000,000 tons, as compared with 8,875,087 tons during the 1919 season. Owing to active mining operations of the iron ranges and a better industrial situation, the demand is expected to be heavy.

Comparative coal shipments from Superior and Duluth docks during the last three years were as follows:

	1919 Cars	1918 Cars	1917 Cars
January	20,430	30,123	30,707
February	13,435	22,327	26,112
March	13,441	13,447	27,043
April	13,000	10,990	14,116

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	1919 Cars	1918 Cars	1917 Cars
May	12,067	12,913	16,389
June	14,984	20,895	19,377
July	17,293	22,768	16,927
August	7,502	21,947	17,177
September	18,134	20,441	18,533
October	31,388	22,393	24,594
November	41,722	23,021	27,092
December	43,330	25,019	22,842
Total	245,735	246,284	260,909

HEAD OF THE LAKES COAL RECEIPTS

Receipts of coal on the Duluth-Superior market during the season of 1919 amounted to 8,875,097 tons, as compared with 11,390,913 tons in 1918, a decrease of 2,515,816 tons. Hard coal receipts increased 125,784 tons and soft coal receipts fell off 2,641,600 tons.

The following table contains the statistics of the Duluth-Superior harbor by months with comparisons by grand totals, furnished by the United States Engineer's office at Duluth:

Month	Port	Soft	Hard	Total
April	Duluth.....	106,750	54,149	150,899
	Superior.....	191,071	50,681	241,752
	Total.....	297,821	104,830	402,651
May	Duluth.....	635,447	47,995	683,442
	Superior.....	658,879	138,340	797,219
	Total.....	1,294,326	186,335	1,480,661
June	Duluth.....	734,416	51,636	786,052
	Superior.....	985,739	126,669	1,112,408
	Total.....	1,720,155	178,305	1,898,460
July	Duluth.....	482,833	60,270	543,103
	Superior.....	853,086	162,308	1,015,394
	Total.....	1,335,919	222,578	1,558,497
August	Duluth.....	239,559	14,600	254,159
	Superior.....	254,376	61,170	315,546
	Total.....	493,935	75,770	569,705
September	Duluth.....	356,133	44,061	400,194
	Superior.....	167,458	112,308	279,776
	Total.....	523,601	156,369	679,970
October	Duluth.....	636,734	70,867	707,601
	Superior.....	464,910	376,241	841,151
	Total.....	1,101,644	447,108	1,548,752
November	Duluth.....	90,202	85,644	175,846
	Superior.....	222,237	272,714	494,951
	Total.....	312,439	358,358	670,797
December	Duluth.....	.....	23,145	23,145
	Superior.....	.....	42,459	42,459
	Total.....	.....	65,604	65,604
Total, Duluth-Superior, 1919		7,079,640	1,795,257	8,875,097
Total, Duluth-Superior, 1918		9,721,440	1,669,473	11,390,913
Loss		2,641,600	2,515,816
Gain	125,784

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	Total Soft	Total Hard
Duluth	3,282,074	452,367
Superior	3,797,766	1,342,890
	7,079,840	1,795,257

Detailed figures covering 1918 receipts appeared on page 35 of the 46th annual edition of THE COAL TRADE (1919).

KANSAS CITY TRADE CONDITIONS IN 1919

The year 1919 had a spotted course as far as the Kansas City coal trade is concerned. Beginning with the first stages of the reconstruction period, when uncertainty marked many of the city's industrial activities, going into the spring season at which time many consumers of coal, notably the railroads, refused to listen to the urgent appeals to store fuel as soon as possible, thus causing many of the mines tributary to this market to be closed down a part of the summer months, and ending up with the chaotic condition existing at the time of the strike, the coal trade never felt sure of what the next blow might be.

Kansas City was probably harder hit by the miners' strike of last November and December than any other large center of population, due to the fact that it was the farthest removed from any of the non-union or anthracite fields. This city's coal supply is practically dependent upon the operation of the mines in Kansas, Missouri, Oklahoma and Arkansas, all of which were completely closed down by the strike. The Chamber of Commerce formed a fuel purchasing agency for the purpose of obtaining coal from foreign fields. This agency, however, was only partly successful in its attempts. The coal which it purchased did not begin to arrive until the strike was practically over, and then few purchasers were found on account of the high price of the coal, which was quoted as follows on December 9, 1919: Colorado nut, \$12.50; Colorado lump, \$12.50; Colorado slack, \$9.60; Illinois egg, \$10.25; Rock Springs (Wyo.) lump, \$11.50; Indiana lump, \$10.75; gas-house coke, \$16.

By taking over the Kansas mines through a court receivership, Governor Henry Allen succeeded in obtaining some coal from the strip pits, but little, if any, of this coal ever found its way into Kansas City, as it was designated for Kansas use. While the success of this operation from a financial or production standpoint was not phenomenal, yet it did prevent a certain amount of suffering in the state.

Any kind of a review of the Kansas City coal trade would be incomplete without mention of the Court of Industrial Relations established in the State of Kansas shortly after the end of the general strike of bituminous miners in November, 1919. Through this law a strike similar to the one referred to would be impossible, as all interests affected are required to refer the trouble to this court for arbitration. This act was bitterly opposed by union labor throughout the state. Should this law be enforceable, which it is thought to be, it would mean that Kansas City will never find itself again in the precarious situation which existed at the time of the bituminous coal miners' strike.

The weather and car situation have been unfavorable to the Kansas City coal trade during the past year. The winter of 1919-1920 has been one of the mildest on record for a number of years past, which has a tendency to slow up the sale of domestic fuel to a certain extent. As a small percentage of this fuel was stored before the winter set in, the effect of the mild winter was particularly marked. The supply of coal cars has been insufficient practically at all times during the year, and particularly was this true of the period shortly after the miners' strike. The shortage of cars was not alone responsible for the

slowing up of the movement of fuel, but the motive power was not all that might be desired. However, Kansas City coal men are optimistic over this matter, believing that the return of the railroads to private control will alleviate this situation materially during the coming year.

The output in the four states represented in the Southwestern Interstate Coal Operators' Association, estimated as approximately 95 per cent. of the total production in the states named, in 1918 and 1919 was as follows:

	1918	1919	Decrease
Missouri	3,627,183	2,199,192	1,427,991
Kansas	6,857,950	5,419,773	1,438,177
Arkansas	1,853,700	1,285,738	567,962
Oklahoma	768,654	700,373	68,281
Totals	13,107,487	9,605,076	3,502,411

The range of retail prices per net ton in Kansas City during the year 1919 is shown in the following table:

	Jan. 1	Apr. 1	July 1	July 25	Sept. 1	Sept. 15	Oct. 1	Oct. 10	Oct. 24	Jan. 8
	1919									
Cherokee lump	7.50	7.25	7.50	7.75	8.00	8.00	8.00	8.50	8.50	8.50
Cherokee nut	7.80	7.00	7.25	7.45	7.70	7.70	7.50	8.25	8.25	8.25
Cherokee mine-run	7.25	7.00	7.00	7.45	7.45	7.45	7.45	7.45	7.45	8.25
Cherokee slack	6.05	5.90	5.90	5.90	5.90	5.90	5.90	5.90	5.90	6.05
Bonanza lump	10.70	9.50	10.00	10.50	10.75	10.75	11.50	12.00	12.00	12.50
Semi-Anth. mine-run	9.80	8.75	8.75	9.25	9.25	9.25	9.25	9.50	9.50	10.00
Semi-Anth. screenings	6.80	6.65	6.25	6.25	6.00	6.65	6.65	6.65	6.65	6.65
Missouri lump	7.10	6.75	6.75	7.00	7.25	7.25	7.50	7.50	7.50	.....
Arkansas grate	15.00	13.00	13.50	14.50	14.50	14.50	15.00	15.00	15.00	15.00
Arkansas egg	15.00	13.00	13.50	14.50	14.50	14.50	15.00	.....	.....	15.00
Arkansas pea	12.15	10.40	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania egg .....	.....	15.50	15.60	16.00	16.00	16.00	16.50	16.50	16.50	16.50
Penna. nut and stove .....	.....	16.00	16.10	16.25	16.25	16.25	17.00	17.00	17.00	17.00
Bonanza coke	16.55	15.00	13.50	13.50	14.50	14.50	14.50	15.00	15.00	12.00
Petroleum coke .....	.....	13.25	13.50	13.50	13.50	13.50	14.50	15.00	15.50	15.50

THE MARKET AT LOUISVILLE IN 1919

The 1919 season is one that will long live in the memory of the Louisville coal trade. The general history given in a thumb nail sketch would show that during the early period of the year there was no market and a good car supply. This condition lasted up to about July 1, when a good demand developed, and car supply dwindled. From then on to the close of the year it was a case of a good market without car supply.

Louisville was better off than many other sections of the country during the fall strike, due to the fact that the western Kentucky mines, which had just been unionized, continued operations. In the Hazard field of eastern Kentucky the mines operated as full as car supply would permit. There were also several scattered operations of nonunion mines throughout the state. At Lynch, Ky., the mines of the United States Coal & Coke Co. produced at full speed throughout the strike, and this was also true of the Wisconsin Steel Co. mines at Benham. Louisville also received a very fair supply of river coal due to open navigation throughout the year.

The retail trade in the spring of 1919 was willing to maintain prices, but were forced to cut all grades about 50 cents a ton to meet competition from West Virginia coal arriving by water. At that time the producers were cutting prices to get immediate business, and the retailers without river facilities managed to meet the competition in fair shape. As demand for block coal increased throughout the country as a result of summer stocking—strike being expected—prices began to rise until they reached a \$4 level for block in the eastern Kentucky fields, while some mines were charging as high as \$5 a ton. Harlan operators

in several instances placed a maximum of \$4 a ton on block. Steam grades sold at considerably over old Fuel Administration prices toward the end of the summer, when industrial buying and lake demand became heavy. Many operators in an effort to create steam demand when block was strong, sold steam on contracts at considerably under government quotations, planning to balance return through higher prices on domestic coal. Then the strike came along and resulted in federal control on the old regulations as to prices.

West Virginia coal sold at prices ranging from \$6.50 to \$7.50 a ton at the close of the 1919 season; eastern Kentucky, \$6.50 to \$7.50 and western Kentucky and Indiana, \$5.75 to \$6. There was a differential of about 25 cents a ton on mine-run, and 60 cents a ton on screenings under the block prices. Anthracite sold at \$13.75 a ton. During the early part of the 1919 season prices went 50 cents a ton or more under these figures, and in October were somewhat higher, although it was impossible for Louisville retailers to get a really high market due to competition of river coal from West Virginia.

Complete statistics are not available on rail receipts at Louisville in 1919. In 1916 and 1917 the average consumption in Louisville was 1,600,000 tons, and in 1918 was estimated at 1,618,021 by rail, with 89,046 tons by water, and 4,928 tons of anthracite, making a total of 1,712,995 tons in all consumed in 1918. However, due to a mild winter stocks were not totally consumed, and summer stocking in 1919 was somewhat lighter than in 1918.

In 1919 the river was open and shipments came through every month of the year, but were lighter than in 1918, due in part to movement of river coal through Cincinnati to other sections. Coal coming to Louisville by river was as follows:

	Tons			Tons	
	1919	1918		1919	1918
January	1,080	None	August	4,586	975
February	430	None	September	1,839	5,231
March	9,462	2,800	October	4,823	4,530
April	1,600	7,594	November	4,112	569
May	1,260	12,855	December	2,504	8,884
June	17,046	5,251	Total	51,952	89,046
July	3,210	40,357			

Comparative rail receipts as reported through the Kentucky operators' traffic division were as follows:

STATEMENT SHOWING MOVEMENT OF COAL INTO LOUISVILLE, KY.

	From				Total Rail Tons	Tot. River Tons
	West. Ky. Tons	East. Ky. Tons	C. & O. Tons	Indiana Tons		
April 1, 1918, to						
March 31, 1919	1,015,833	73,719	25,527	125,394	1,440,473	97,218
	70.5%	19%	1.8%	8.7%	100%	
April, 1919	43,985	30,781	2,290	12,657	89,713	1,600
	49%	34.3%	2.6%	14.1%	100%	
May, 1919	53,606	33,437	4,698	8,388	100,129	1,260
	53.5%	33.4%	4.7%	8.4%	100%	
June, 1919	52,660	37,094	6,149	8,748	104,651	17,046
	50.3%	35.4%	5.9%	8.4%	100%	
All-Rail						
Via	June, 1919		June, 1918			
	No. Cars	No. Tons	No. Cars	No. Tons		
B. & O. R.R.	0	0	1*	54*		
C. & O. R.R.	137	6,149	47	1,666		

Illinois Central R.R.	641	30,127	832	36,608
L. & N. R.R. (E. Ky. and Tenn.) ..	821	37,038	565	25,172
L. H. & St. L. Mines	3	144	45	1,899
L. & N. W. Ky. Mines	488	22,389	1,219	46,884
Monon	12	634	13	640
Southern Ry. (Indiana Mines)	167	8,114	176	8,662
(C. N. O. & T. P. Mines)	1	56	0	0
Total (Bituminous)	2,270	104,651	2,897	121,531
(Anthracite *)	0	0	1*	54*

Via	July, 1919		July, 1918	
	No. Cars	No. Tons	No. Cars	No. Tons
B. & O. R.R.	0	0	2*	70*
C. & O. R.R.	211	9,335	21	783
L. & N. R.R. (E. Tenn. and Ky.) ..	770	34,896	579	26,919
L. H. & St. L. Mines	0	0	41	1,679
L. & N. W. Ky. Mines	523	24,213	1,277	56,321
Ill. Cen. R.R. (W. Ky. Mines)	832	39,014	1,059	46,596
Monon (Indiana)	15	791	88	4,512
Southern R.R. (Indiana)	145	8,230	150	7,553
Total (Bituminous)	2,496	116,559	3,215	144,363
(Anthracite)	0	0	2*	70*

Via	August, 1919		August, 1918	
	No. Cars	No. Tons	No. Cars	No. Tons
C. & O. R.R.	173	7,681	51	2,185
L. & N. R.R. (E. Tenn. and Ky.) ..	842	38,783	421	19,845
L. H. & St. L. Mines	0	0	23	990
L. & N. W. Ky. Mines	610	28,306	1,264	59,107
Ill. Cen. R.R. W. Ky. Mines	927	43,567	909	39,996
Monon (Indiana)	3	181	61	3,202
Southern R.R. (Indiana)	232	11,018	69	3,496
Total (Bituminous)	2,787	129,536	2,798	128,821

Via	September, 1919		September, 1918	
	No. Cars	No. Tons	No. Cars	No. Tons
B. & O. R.R.	1	56	3	102
P. C. C. & St. L. R.R.	0	0	2*	75*
C. & O. R.R.	176	8,009	26	920
L. & N. R.R. (E. Tenn. and Ky.) ..	557	24,349	471	22,752
L. H. & St. L. R.R. Mines	18	600	63	2,756
L. & N. R.R. W. Ky. Mines	568	25,992	1,070	46,292
Ill. Cen. R.R. W. Ky. mines	845	39,715	944	44,368
Monon (Indiana)	8	400	69	3,772
Southern Ry. (Indiana)	164	7,856	96	4,899
Total (Bituminous)	2,337	107,062	2,742	125,861
(Anthracite *)	0	0	2	75

Via	October, 1919		October, 1918	
	No. Cars	No. Tons	No. Cars	No. Tons
B. & O. R.R.	14	638	0	0
P. C. C. & St. L. R.R.	1*	50*	0	0
C. & O. R.R.	115	5,234	103	4,381
L. & N. R.R. (E. Tenn. and Ky.) ..	628	28,112	453	20,670
L. H. & St. L. R.R. Mines	39	1,836	68	2,943
L. & N. R.R. W. Ky. Mines	989	44,512	1,364	62,250
Ill. Cen. R.R. W. Ky. mines	974	45,773	980	46,060

Monon (Indiana)	6	311	15	873
Southern Ry. (Indiana)	177	9,043	160	8,635
Total (Bituminous)	2,942	135,464	3,143	145,812
(Anthracite *)	1	50	0	0

No figures are obtainable past October on movements. It is believed, however, that due to increased manufacturing consumption, and the steady increase in industrial operations, that production consumed in Louisville will run right around the 1918 average as a whole.

Movement of coal from eastern and southeastern Kentucky was especially heavy through the following junctions: McRoberts, Hazard, Harlan, Middlesboro and Appalachia. Coal through McRoberts and Harlan went into various districts of the North and East as well as West, where there was a demand for gas, by-product and lake coal. Movement was largely to Columbus, Cleveland, Cincinnati, Dayton, Lima, Lorain, Toledo, Youngstown, Battle Creek, Detroit, Grand Rapids, Kalamazoo, Wyandotte, Michigan, Fort Wayne, etc. There was also a good movement through Evansville, St. Louis, Memphis, Knoxville and Louisville. A considerable amount of coal went into the South, especially the textile mill districts, with some to seaboard for bunker purposes.

After the strike was called off Kentucky suffered badly from car shortage and discrimination in distribution of cars. Statistics placed before Railroad Administration officials in Washington showed that the Louisville & Nashville lines in both eastern and western Kentucky, Tennessee, and the South had been short of cars, and that mines were operating on a 58 to 70 per cent. basis. During the strike period mines had much coal seized by the carriers, and coal rerouted by the Railroad Administration, and payment was very slow, while it has been next to impossible to trace movement of many cars that were rerouted, and find out who did finally get them.

BUSINESS NOT ON SATISFACTORY BASIS

Business for the year in Kentucky was not especially satisfying. The retailers reported that, due to competition prices were not maintained in the early season, while costs were greater than in 1918, resulting in smaller profits, as the \$2.20 margin was not adhered to. The jobbers had a dull period toward the end of the year when mines were able to sell entire output without the assistance of the jobbers. Operators had a very fair season up to October, although the early part of the year was poor. When demand became good there was a steady car shortage, and filling low priced contracts kept many operators from taking advantage of the market. Federal prices were based on operation when costs were much lower, and during the last months of 1919 many mines operated at a very low margin of profit.

Western Kentucky during the year dropped backward in river shipping to the South, and the Pittsburgh Coal Co. dropped out entirely. The Island Creek Coal Co. and one or two other companies have been handling considerable coal on the upper Ohio, and there are two or more concerns which have plans for developing river transportation either up the Ohio or Ohio and Kentucky rivers. One of these plans would take coal from the Hazard field to Beattyville, and thence South over the Kentucky and Ohio Rivers.

TRADE MOVEMENTS AT MILWAUKEE

The greater part of the coal receipts of Milwaukee, Wis., are received via water and handled over the docks at that port. Detailed statistics covering the anthracite and bituminous vessel receipts since 1911 show the following:

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Season	Anthracite	Bituminous	Total
1911.....	1,005,750	3,560,063	4,565,813
1912.....	952,117	3,569,206	4,521,323
1913.....	1,148,920	4,040,311	5,189,231
1914.....	1,064,558	4,295,536	5,360,094
1915.....	1,084,715	3,770,886	4,855,581
1916.....	853,217	3,737,167	4,590,384
1917.....	927,266	3,014,217	3,946,583
1918.....	839,092	3,446,061	4,285,153
1919.....	985,692	3,050,337	4,036,029

The tonnages received via all-rail and car ferry routes, together with the grand totals are shown in the next tabulation. These latter figures make no division between anthracite and bituminous. The rapid increase in all-rail receipts since 1916 may be attributed to heavier shipments to Milwaukee territory from Illinois and Indiana mines.

Coal	1915	1916	1917	1918	1919
By all-rail	193,157	359,824	787,482	728,851	532,936
By car ferries	212,183	246,174	238,191	174,163	309,350
Grand total*	5,270,545	5,196,382	5,167,256	5,188,167	4,878,315

*Includes lake receipts, supra.

Figures covering the vessel receipts, arranged according to cargoes, reveals a decrease in the number of cargoes in 1919. These records, made available through the courtesy of the Milwaukee-Western Fuel Co., show that 503 cargoes were received during the past season. Comparative figures of vessels and cargoes since 1911 follow:

	1911	1912	1913	1914	1915	1916	1917	1918	1919
Cargoes over 10,000 tons....	50	73	129	147	107	158	156	189	161
9,000 to 10,000	117	89	75	63	113	52	39	22	53
8,000 to 9,000	36	36	19	27	41	30	24	37	39
7,000 to 8,000	68	95	116	108	93	116	86	101	78
6,000 to 7,000	126	119	132	119	128	107	80	98	71
5,000 to 6,000	57	107	82	63	77	37	31	28	44
4,000 to 5,000	40	28	33	35	13	8	44	17	10
3,000 to 4,000	147	77	119	85	45	55	28	20	26
2,000 to 3,000	108	56	74	69	54	45	16	13	21
1,000 to 2,000	9	5	19	18	9	6	7	0	0
Less than 1,000 tons.....	3	0	2	0	4	0	3	0	0
Total received	761	685	800	734	684	614	514	525	503

RECEIPTS BY INDIVIDUAL COMPANIES

Twelve companies received the 1919 tonnages carried via water. The division as between the different receiving companies for the year was as follows:

	Tons Anthracite Season	Tons Bituminous Season	Grand Total
Milwaukee-Western Fuel Co.	504,636	1,173,329	1,677,965
Lehigh Valley Coal Sales Co.	169,037	.....	169,037
Phila. & Reading C. & I. Co.	102,807	.....	102,807
Kanawha Fuel Co.	50,147	72,706	122,853
Central Coal Co. ....	.....	138,147	138,147
Youghiogeny & Ohio Coal Co. ....	.....	172,195	172,195
Callaway Fuel Co.	38,569	17,012	55,581
United Coal & Dock Co.	107,463	271,476	378,939

THE COAL TRADE

	Tons Anthracite Season	Tons Bituminous Season	Grand Total
Milwaukee Coke & Gas Co. ....	.....	1,082,790	1,082,790
Milwaukee Gas Light Co. ....	.....	104,782	104,782
Illinois Steel Co. ....	.....	14,500	14,500
Fellenz Coal & Dock Co.	13,033	3,400	16,433
Total	985,692	3,050,337	4,036,029
Season 1918	839,092	3,446,061	4,285,153
" 1917	922,538	3,025,558	3,948,096
" 1916	853,217	3,737,167	4,590,384

The storage capacity of the Milwaukee docks is estimated at 2,400,000 tons—600,000 tons of anthracite and 1,800,000 tons of bituminous. The aggregate unloading capacity is 10,000 tons per hour.

Milwaukee draws upon Buffalo for its major anthracite supply, although a small quantity is sometimes shipped from Erie and Oswego. The points of original shipment for the bituminous supply and tonnages have been as shown in the following table. These figures include a small amount of anthracite from the ports previously named.

Source By Lake From	1914	1915	1916	1917	1918	1919
Erie	191,646	194,525	42,550	75,409	130,522	86,163
Cleveland	676,776	575,180	226,694	184,085	456,274	183,685
Ashtabula	354,149	288,556	578,565	167,366	180,845	332,408
Lorain	576,868	642,922	458,603	65,622	173,276	210,776
Sandusky	597,903	564,443	402,246	519,696	153,897	297,173
Toledo	1,237,635	1,251,285	1,801,970	1,762,314	2,119,982	1,873,628
Fairport	66,740	101,391	83,697	30,234	9,500	.....
Huron	173,953	38,135	40,546	103,941	111,493	128,672
Other ports ..	35,698	120,334	102,296	119,989	*102,621	*28,936

*Conneaut.

Coal shipped from the Milwaukee docks over the various roads was as follows:

Route	1914	1915	1916	1917	1918	1919
C., M. & St. P. Ry.	763,132	922,819	718,445	385,270	621,015	761,330
C. & N. W. Ry.	581,908	620,982	629,684	550,227	580,911	660,433
M., St. P. & S. S. M. Ry. (Soo line)	135,865	112,105	69,354	36,853	16,391	35,462
Lake	5,345	490	.....	885	2,063	.....
Total	1,468,250	1,656,396	*1,417,483	973,493	1,220,410	1,457,225

*Small lake shipments not included.

Receipts of coal by lake and rail at Milwaukee in 1865 amounted to 36,369 tons; in 1870, 122,865 tons; 1880, 368,568 tons; 1890, 999,657 tons. That was the first approach to a million tons. In 1900 receipts were 1,808,593 tons. In 1905, 3,157,464 tons were received, the amount growing yearly until 1910, when 5,061,201 tons were received; 1915 showed receipts of no less than 5,260,921 tons and 1916 5,196,382 tons.

MINNEAPOLIS-ST. PAUL MARKET IN 1919

Lack of supplies and an unusual demand served to make 1919 a strenuous year for the coal dealers of the Twin Cities. The volume of business was large, but the situation was such that nearly everybody, consumers as well as dealers, was kept continually on edge. The winter was longer than usual, and colder; heavy supplies were in constant demand. The ingenuity of the coal men and the transportation interests were often taxed to the utmost to keep the home

fires burning. The situation had to be met and it was met. In some way the people managed to keep warm. When the temperature rose to 73 degrees on the last day of March, 1920, it was generally felt that the campaign was over and that all hands had earned the right to a little breathing spell.

Retail dealers in anthracite made a little profit when they could get the goods to sell. Prices at the opening of the season on April 1, 1919, were: Nut, \$13.60 the ton; stove, \$13.50; egg, \$13.30; pea, \$12.10, and buckwheat, \$10.50. Ten cents was added to the price per ton on the first of the month for five months, and prices have been maintained at the increased level after September. Much more coke was used than ever before to piece out the anthracite. Coke, in fact, took a large part in carrying consumers into the clear. The first of April, 1920, finds the bins of the dealers practically bare.

Three months of the shipping season by the lake route were lost by reason of the coal dock strike at the Head of the Lakes. Two million tons of soft coal had been carried over at the end of the trade year 1918, but no more than enough was brought up the lakes the past year to meet the immediate demand. There is no hard or soft coal to carry over into 1920-21. In this respect the situation is less satisfactory than it was a year ago. Navigation was slow in opening a year ago, however, and it was June before new stocks began to appear in the Twin Cities. An early opening this year would be a boon to all the Middle West.

The 1919 profits on steam coal contracts were not so good as they might have been. The companies could not always get the coal when deliveries could have been made at the best advantage to themselves, and thus were forced to see a part of their margins disappear.

Summed up, it was a trying year for the coal men of Minneapolis and St. Paul. Confronted by a strong demand, they were hampered most of the time by a lack of supplies. Shortage of cars and the near demoralization of transportation added to their woes.

THE COAL TRADE OF MOBILE

Coal tonnage down the Warrior River for 1919 showed a marked increase over the same period in 1918, and the dreams of those interested in the canalization by the government of this river are at last beginning to come true. In 1919 99,337 tons of Alabama coal were brought down, and the records for January and February, 1920, show 22,147 tons, which indicates that the current year will show a still greater increase. The operation of the Warrior is now under the control of the War Department, with General Frank T. Hines as director of operations. At present, there are 43 wooden barges and five self-propelled steel barges in operation.

The railroads brought coal into Mobile as follows: Gulf, Mobile & Northern, 989 cars; Mobile & Ohio, 651 cars; Louisville & Nashville, 3,272 cars, and the Southern, 1,812 cars.

Bituminous coal exports last year totaled 6,224 tons, as compared with 7,007 tons in 1918.

MARKET CONDITIONS AT NEW YORK IN 1919

Reversing the generally accepted order of things, the year 1919 in the New York coal trade came in "like a lamb" and went out "like a lion." The winter of 1918-1919 was one of the mildest seasons experienced in many years—in direct contrast to that of 1917-18 and the last one through which we passed—and with moderate weather tempering the demand for household fuel, the bituminous coal market was similarly inactive because of a more or less general industrial suspension following the signing of the armistice.

The anthracite trade was practically lifeless throughout the first quarter of the year, and not until April 1, the beginning of the new coal year, was there any marked activity. From early January until the latter part of March, there were intermittent flurries in the popular domestic sizes—stove and chestnut—but during that period many mines were idle two or three days a week—a few were shut down altogether—and operators were storing their product at the mines when the collieries were in operation. The steam sizes enjoyed no more popularity than the domestics, although fairly large tonnages of the juniors had been brought to New York harbor and loaded on boats in anticipation of a cold snap. Activity in this trade was encouraged because of the fact that the municipal authorities were threatening to become more rigid in their enforcement of anti-smoke ordinances, which would have interfered with the use of bituminous in apartment houses and office buildings.

At the outset of the year, the bituminous market showed some signs of life, but this existed only for the duration of a short contracting period, and soft coal soon reverted to the sluggishness that characterized the close of 1918. Consumers at this time came into the market to contract for their yearly requirements, and many of the ex-war plants were planning to resume operations on a peace-time basis. The call was mostly for the higher grades, however, and inferior grades were so sluggish at times that the piers at New York were embargoed because of the congestion of low-grade coals.

On January 17, the Fuel Administration announced that effective February 1, all zoning rules, and regulations governing purchasing agents' commissions and wholesale and retail gross margins other than rules affecting Pennsylvania anthracite prices would be suspended, although subject to reinstatement. Some confusion resulted because jobbers were undecided as to the advisability of shipping eastern coal to the western markets which were already flooded with coal allocated under the zoning plan. Unlike anthracite, which picked up considerably after April 1, the stagnation in the bituminous trade extended far beyond the first quarter—in fact, there was pronounced lifelessness until after the effects of the strike on November 1 were first felt—and February, 1919, has been described as one of the worst months in the history of the industry. For several months, industrial plants were in a transition stage, changing from a war to a peace time basis, but even after a revival when factories were again on a productive basis, it seemed that the coal reserves which had been accumulated were almost inexhaustible, and buyers evidenced practically no interest whatever in the bituminous market for a period of nearly six months.

ANTHRACITE DEMAND PICKS UP IN APRIL

The first of April naturally proved the turning point in the anthracite market, and brought a sharp demand for the domestic sizes, particularly egg and stove, which was accentuated by a protracted strike in the harbor which interfered with the water delivery to dealers in districts lying beyond Manhattan. Egg and stove coals enjoyed the normal seasonal calls in the city, while chestnut and pea were popular in the outlying districts, although the demand for the latter by no means absorbed the available supply, and this size was being stocked at the mines. However, pressure from dealers who had deferred placing their orders in anticipation of a reduction in prices, had a buoyant effect on the movement of most of the domestic sizes, and throughout the spring and summer, mines worked on full time schedules. Egg and stove coal during the early summer began to command premiums when held by independent operators, the premiums ranging from 40 cents to \$1 above the circular prices. Steam sizes were sluggish a greater part of the time, although there were temporary periods of activity.

The latter part of May brought inquiries for bituminous on contract, but up to that time, quotations had been less than the government prices which were

removed on February 1. As a matter of fact, in the early part of May, some quotations on low-grade bituminous at the mines ranged as low as \$1.80, with pool 10 coal at \$2.35 to \$2.75, and pool 11 at \$2.15 to \$2.50. The middle of June saw some rejuvenation, with prices for the best grades running as high as \$3 under contract, and \$2.75 for spot sales, but in early July the market was again sluggish and causing great anxiety to both jobbers and operators. It was at this time that the National Coal Association started its famous "buy now!" campaign, and for a short time there was a tendency toward a panicky market, but by the end of the summer this had subsided and there was a decided softening. During this period, inferior grades were brought up with the demand for high-grade coals—steam coal buyers were active, and prices approached \$4. The effect of the campaign was also reflected in a stimulation of the already heavy demand for anthracite domestics.

PREMIUMS REACH NEW LEVELS

Under the stress of scattered labor troubles in the anthracite regions in September, dealers and consumers became worried, and premiums on some independent domestic sizes were forced as high as \$1.50 above circular, but the strikers were not backed by their leaders, and there was no prolonged idleness. Steam sizes were not in great demand, and prevailing prices during September were from 25 to 40 cents below circular. By mid-October, dealers had reduced their accumulations of orders to a minimum, and throughout the balance of the year the anthracite trade remained steady, with an easy flow of coal enabling dealers to meet requirements until the first touch of a severe winter arrived toward the close of the year. This brought the usual demand from small dealers and peddlers for chestnut and pea coal, while delivery of the larger domestics was held up by the refusal of truck drivers and teamsters to work in zero temperatures.

Through most of October, domestic buyers of bituminous continued to show the same lack of interest in future supplies that had characterized the first nine months of the year, and embargoes against tidewater were necessary to reduce the accumulation of coal at the piers. The export demand at this time formed the backbone of the market, stabilizing it by preventing a slump, and there were many vessels reporting for cargoes, but the line trade was absorbing most of the high-grade coals at prices ranging from \$3.25 to \$3.50. Tidewater prices ranged from \$3.15 to \$3.25 for high-grade coals, and from \$2.60 to \$2.90 on low and medium grades.

The approach of November 1 and the prospects of a strike in the bituminous fields on that date, caused prices to rise rapidly during the last week in October, and by the time the strike was called in accordance with the schedule, spot figures had risen to as high as \$5 for the better grades, with approximately \$4 quoted for lower grades. Pool 9 and 71 coals were practically out of the market by this time, and most quotations were on pool 10. Loaded boats in New York harbor brought as high as \$9 per ton. Consumers were in an excited state for a short time, but the restoration of government control of prices seemed to calm them, and they were more or less indifferent as to future supplies.

The chief source of difficulty to coal operators and wholesalers subsequent to the calling of the strike were the sweeping orders of the Railroad Administration which gave the administration complete control of all coal awheel on November 1 and thereafter, and the widespread diversion and confiscation of shipments by the authorities soon had clerical forces in the coal offices hopelessly entangled in a mass of "red tape." Vast sums of money were also tied up in diverted shipments which, in many cases, wholesalers were unable to trace for many months.

The strike was officially terminated by the acceptance of an offer from President Wilson to appoint a commission to adjust the wage dispute, but the miners were indifferent about getting back to work. During the period of the strike, overseas shipments were under the ban; ~~dumpings~~ at the piers were regulated entirely by permit, and there was much ~~coal~~ standing between the mines and tidewater.

TRADE AT PHILADELPHIA IN 1919

So many things happened in the coal year of 1919-20 that the Philadelphia market was held in a state of almost continuous chaos. This is especially true of the bituminous end of the trade, but anthracite had its troubles as well, notwithstanding that business was carried along on a more even keel. With a final abolishment of all federal regulation effective April 1, 1920, the bituminous men begin the 1920-21 year in a far more hopeful frame of mind.

As to domestic fuel one of the outstanding features of the anthracite trade was the marked change in sentiment as to favoritism of sizes. Philadelphia for years was a marked consumer of pea coal. This served to even up the sales nicely for this market. The steady advance in price of the prepared sizes narrowed the differential between stove and nut as compared with pea, so that household consumers turned from pea and demanded nut and stove during the last year. As a result the market was unable to meet the demand at any one time for stove and nut, while pea coal was placed with difficulty, and then only when it was forced on the market as a substitute for the more wanted sizes. This narrowing of the differential in prices was not alone responsible. Pea was always called the "poor man's coal." The wage earner had a most prosperous year, and demanded the best. He declined to get along with pea coal when nut and stove were obtainable, and with him price, at least the extra cost of nut as compared with pea, was of little concern.

At the opening of the coal year in 1919 the retail distributors of the city began an intensive advertising campaign on early buying. The usual April 1 reduction did not prevail last year. Instead coal was advanced 10 cents a ton beginning April 1, and each succeeding month until September. The operators lent assistance to this advertising campaign, which had the effect of materially increasing the summer business.

YEAR HAD BRISK OPENING

The demand for domestic sizes has been brisk continuously throughout the year. The operators entered the year on April 1 oversold for the month, with the possible exception of pea. This market condition continued throughout the year. As the summer months came and went the nut and stove sizes became scarcer, and pea coal more plentiful. Egg coal was placed without much trouble, this market taking its accustomed share, which is always comparatively small as compared with other nearby markets, especially New England.

The steam sizes of anthracite were the operators' real trouble. With steady operation of the mines, the output of the junior sizes was almost at a maximum. The advent of fuel oil as a competitor, and many other trade conditions of the year, resulted in the necessity of running the smaller sizes into storage. The piles began to assume huge proportions, and for a time became a matter of serious concern. The bituminous strike, while of short duration, gave the smaller buckwheats some impetus, so that for the first time the storage piles were drawn on to fill orders. As winter came on, and production was curtailed for one reason or another, at the same time consumption correspondingly increasing, the juniors became more active. The coal year closed with the storage yards practically depleted, with all the sizes in good demand, and with buckwheat No. 1

selling at \$4 at the mines; rice practically out of the market and barley bringing \$2 at the mines. The prices prevailing the last of March, 1920, for the prepared sizes were as follows: Egg, \$6.35; stove, \$6.60; nut, \$6.70, and pea, \$5.30 f. o. b. mines gross ton. To this must be added 75 cents a ton for "independent" coal. The retail prices of coal in Philadelphia for the year after the 50-cent advance last summer were: Egg, \$11.25; stove, \$11.90; nut, \$11.90; pea, \$9.55. In February and March of 1920 these prices were slightly advanced. To the above prices 50 cents a ton was added for carrying charges when coal is carried. All anthracite coal in Philadelphia is sold at 2,240 pounds to the ton.

When the bituminous market entered on the coal year of 1919-20, it did so with a free hand so far as federal regulations were concerned, the Fuel Administration having discontinued control about February 1, 1919. The market was confronted, however, with a considerable surplus stock of coal held by the industries and accumulated in the last days of the war period. At about the same time there was a bitter struggle between the operating interests and the railroads in an effort to beat down prices to a \$2.50 basis. Coal along in April, 1919, was quoted at \$2.80 to \$3.90 the net ton, but these prices were considerably undersold here and there so as to place the market in a very unstable condition.

The demand for export coal later on had the effect of increasing prices, first on the better grades, and finally when the higher grades were entirely withdrawn from the market the more ordinary grades took on an active spurt. At about this time operators discovered that labor failed to get out a maximum tonnage, which coupled with car shortage reduced tonnage capacity of the mines to about 60 per cent.

AUGUST, SEPTEMBER AND OCTOBER BANNER BITUMINOUS MONTHS

There were only about three months in the year when the producing trade had anything like a fair yield. These months were August, September and October. In November came the nationwide bituminous strike, and with it a return of federal regulation and "fixed prices" that continued in their disturbing elements up to April 1. Following the strike in November, which was ended by the temporary award of 14 per cent. increase in wages to the miners, came a most severe car shortage, and for the rest of the year coal was even scarcer than during the actual period of the strike. In order to supply the industries with fuel the exporting of coal was almost wholly discontinued by governmental regulations.

Coal from the mines was almost wholly shipped on contracts during the greater part of this period, since this coal could be billed at the existing contract figures, regardless of federal price regulations. During this period the railroads and some of the "preference" receivers were short of coal, so that fuel was diverted by order of the Fuel Administration and confiscated by the railroads. Much trouble followed in the way of receiving settlement for coal so diverted which added additionally to the coal man's troubles.

The return of the railroads to private ownership on March 1, 1920, the passing of the Fuel Administration, and the final order of the President abolishing "fixed prices" and federal regulation, and the final award of the miners' wage increase of 27 per cent. becoming effective on April 1, 1920, ended the momentous coal year in the history of the trade.

FREIGHT RATES ON PHILADELPHIA SHIPMENTS

Freight rates on anthracite for Philadelphia track delivery over the Philadelphia & Reading are as follows: Schuylkill region, prepared sizes, \$1.90 the gross ton; pea, \$1.70; junior sizes, \$1.70; for transshipment inside the capes, same as rates on track; for shipment outside the capes, prepared sizes, \$1.80;

pea, \$1.60; buckwheat No. 1, \$1.50, and small sizes, \$1.40.

The rates on anthracite for Philadelphia track delivery by the Pennsylvania R.R. are as follows: Schuylkill region, prepared sizes, \$1.90; pea, \$1.70; juniors, \$1.70. Lehigh region, prepared sizes, \$2; pea, \$1.80; juniors, \$1.70. Wyoming region, prepared sizes, \$2; pea, \$1.80; juniors, \$1.80. For transshipment by water, both inside and outside the capes, Schuylkill region, prepared sizes, \$1.65; pea, \$1.50; junior sizes, \$1.50. Lehigh region, prepared sizes, \$1.75; pea, \$1.60; junior sizes, \$1.50. Wyoming region, \$1.75; pea, \$1.60; junior sizes, \$1.60.

Bituminous rates to Philadelphia on coal for transshipment outside the capes as a rule are 35 cents lower the gross ton than to the lower New York harbor, and seven cents a gross ton more than to Baltimore, owing to established rail line differentials. The rate from the Clearfield region to Philadelphia for track delivery is \$2.20 the gross ton; for transshipment to points inside the capes, \$1.95; for transshipment outside the capes, \$1.80. The rate for transshipment outside the capes being \$1.80 as against \$2.15 in the lower New York harbor, and \$1.73 for Baltimore loading. The Greensburg rate is 10 cents a ton higher than the Clearfield rate; the Westmoreland and Fairmont (B. & O.) rates 25 cents higher, and the Pittsburgh rate 40 cents higher.

PITTSBURGH COAL TRADE IN 1919

The history of the coal industry of the Pittsburgh district for 1919-20 period seemed to prove more than ever before the underlying sturdiness of the American coal producer, for he was surely tested and tried by fire of adversity, induced by strikes, government exactions of amazing severity, car shortage, and to perhaps a less degree, the animus of an ill-informed public opinion. But the manner in which all these conditions were met speak well for the industry as a whole. In face of the well known fact that the coal industry in so far as organization is concerned is relatively loose jointed and lacking in cohesive strength, the year brought developments in cooperation and better understanding among many of the branches of the industry, especially in Pittsburgh, and has also, it is generally believed, brought about a better understanding between the coal producers and railroad interests.

The opening of the coal year of 1919, on April 1, was when the depression in demand following the armistice, through cutting off much war industry and industrial activity, was breaking and new life and readjustment of trade and business were sufficiently advanced to show improvement in coal consumption and a return of confidence in general business. Prices in Pittsburgh markets for the month were weak, and lower than the government basis was reached in some of the transactions, though contract tonnage was avoided by both the buyer and seller. The activity of the railroads in buying fuel during this period was noticeable. In May, the rail interests gave up what appeared a desperate attempt to break the \$2.35 base for run-of-mine coal and began to place orders for round tonnages. Steam coal buyers generally took the cue from railroads and began to cover for their needs, which were growing. Then lake shipments began to absorb a fair tonnage and as a result the apparent weakness in undertone to the price basis of coal in the district began to disappear.

Contracts placed in May began to show an upward tendency toward the end of May and the June trading was ushered in with fully 75 per cent. activity in the district so far as producing is concerned. June also developed what earlier had been predicted—the scarcity of mine labor the moment the industry showed nearly normal conditions of demand. The inability to make prompt shipments of coal as usual caused more active contracting to begin and consumers were making frequent efforts to get under cover for what they regarded as a possible shortage of fuel when railroad facilities were taxed. It was in June

that the first serious warning went out from the coal industry of the district that a shortage of fuel would be certain without better car supply, for the first signs of car shortage were at hand and the winter of 1920 was a center for much concern. In June also a development of interest in the industry of the district was the merging of the Hillman interests with the United Coal Corporation, making one of the most important industrial developments of the field for the year.

CAR SHORTAGE APPEARS EARLY IN JULY

In July, the car shortage began to actually hold back shipments of fuel coal and desired production. At the same time the demand for lake shipments was more pressing and was not possible to meet. It was in July that the condition became so plainly one of scarcity of fuel that leading producers withdrew all prices and quotations to date. Shortly after a general advance of 15 cents was made. It became apparent that the best labor supply possible for the year would not go above 65 per cent. of normal. The advanced prices soon became established and the producers began to withdraw from contract sales. July saw the resumption of the steel industry that pulled itself out of the rut of armistice depression and began to call for coal in larger volume.

River mines in the Pittsburgh district came to the rescue of the congesting railroad routes and the high pressure put on the entire district became severe, but was made acute by the steady fall-down of the car supply that restricted output seriously. It was such conditions that formed a natural cause for further advance in prices and in August, the asking price for screened coal reached \$3.25 while lake coal shipments began to steadily fall behind. Both labor and car supply increased in shortage and fears for the winter stimulated the buying movement. Sales of slack began at \$1.85 at the mine and jumped to \$2 and then to \$2.25 in a few days. The failure of natural gas supply for industries turned heavy demand on producer gas and this opened an extra heavy call for producer coal especially for glass factories and for by-product coke plants. By the end of the month screened coal reached \$3.50 and buyers began to bid for their tonnage. September was simply a general tightening of all lines in the market and buyers becoming nervous were out pressing claims for contract tonnage, which producers naturally seemed to hesitate to consider. The spot market was limited because of the heavy call for contract tonnage and in actual volume dwindled materially.

In October began the sharper effects of a strike of steel workers that commenced the latter part of September and seemed to become prevalent in all sections of the country. Pittsburgh was less affected than other fields but its resultant effect on the coal industry was to shut off some on steam coal demand. This slight easing off in the market early in October was soon counteracted by a new danger. This was the menace of a miners' strike that was in violation of wage agreements but nevertheless inevitable.

Radicalism among the leaders of the mine workers and general postwar restlessness resulted in a practically complete suspension of operations in all union coal mines in the district. Westmoreland or Irwin fields, which are unorganized, were kept in operation. Much of the Allegheny Valley producing district was also active. Fortunately, too, the Connellsville coke field which was not recovering from wartime activity because of the incoming of many by-product plants, was able to turn its coal producing facilities to good account and, being unorganized, filled in a huge vacancy in the tonnage needed and kept the Pittsburgh industrial and railroad needs moderately supplied. One of the incidents of the coal strike, the reestablishing of the Fuel Administration, had a depressing effect on the spirits of coal producers because of the injustice it worked and prevention of efforts to supply the country's needs of fuel at higher than government prices.

By the end of December, production, through car shortage and labor shortage, was forced down to 40 per cent., while demand increased by cold weather and that element of coal consumption assumed serious phase by the freezing of the Monongahela River which cut off the river mines from supplies. In January, 1920, moderating weather helped to relieve actual distress and also enabled railroads to make a better showing in the movement of fuel from the mines. There was a better operating of mills and furnaces and domestic supplies were freer, all through January and February, but it was impossible to obtain forward supplies or accumulate reserve coal by large consumers. January production dropped 1,000,000 tons in the district because of the shortage of labor and cars.

February witnessed little change but moderate weather enabled a better rail movement of coal. In February some weeks saw production drop to 30 per cent. The demand pressed hard as industry gained momentum and railroads began to show concern over their own supply of coal and began to confiscate generally—causing endless confusion and resentment among shippers. In March, the closing month of the coal year, idleness of mines increased because of the car shortage. For days a 20 per cent. car supply was common and this affected industrial activity also, closing many plants except those located along the Ohio and Monongahela Rivers which were supplied with river coal. March, however, saw the passing of the peak of the coal car shortage and also witnessed the early opening of the lake coal movement.

RECEIPTS AND FACILITIES AT PROVIDENCE, R. I.

Providence, R. I., is not only a large coal consuming point, but is also the port of arrival for an important tonnage distributed to numerous manufacturing plants in southeastern New England. Water front yards are found on both banks of the Providence River. Prominent among these are the plants of the Seaconnet Coal Co., with a storage capacity of 50,000 yards and that of Curran & Burton, with a capacity of approximately 25,000 tons. The John R. White Co. has several yards on the Providence and Seekonk Rivers, while the Eastern Coal Co. has a yard at the head of the Providence River.

Receipts at Providence last year, according to figures furnished by the harbor master at that city totaled 1,306,614 tons; in 1918 they were 2,390,144 tons and in 1917, 2,090,843.

BUNKER TRADE AT PENSACOLA, FLA.

Bunker trade at Pensacola, Fla., showed a decline last year, the total being 56,310 tons, as compared with 62,839 tons in 1918. On the other hand, exports last year totaled 24,434 tons, while nothing was reported in the way of foreign shipments in 1918, so that the total movement through the port, 79,746 tons, was greater in 1919 than in the preceding year.

The movement of bunker and export coal by months in 1919 was as follows:

Month	Tons Bunker	Tons Export	Month	Tons Bunker	Tons Export
January	6,279.80	.....	August	11,257.20	2,156.85
February	3,731.15	.....	September	1,558.15	1,381.40
March	1,728.45	1,477.65	October	11,478.35	11,914.70
April	5,805.05	2,234.80	November	3,472.50	.....
May	2,326.10	.....	December	5,381.60	.....
June	2,085.60	2,120.95	Total	56,310.15	24,434.60
July	1,206.20	2,148.25			

By reason of its geological location and harbor facilities, Pensacola is a convenient coaling point for steamers touching at Gulf ports. Situated within 200 miles of the Alabama coal fields and served by the Louisville & Nashville

R.R., the port presents many advantages for the handling of bunker and export tonnage. The rebuilt Muscogee Wharf, with electric coal elevator, and elevated tracks and gravity chutes for direct deliveries from car to vessel make the port attractive to the coal man. Extensive improvements have been made in the channel to the coal berths. The channel has been widened and the turning basin enlarged so as to accommodate the largest vessels without the necessity of employing tugs to navigate.

During the year the Georgia, Florida & Alabama Ry. placed its coaling dock in commission. This dock is of Link-Belt design. Since its operation, the road has been enjoying an increasing share of bunker and foreign business.

TRADE AT ST. LOUIS IN 1919

Conditions in the St. Louis market during the year 1919 were the most contradictory and inconsistent that have ever obtained in all the time that St. Louis has been the controlling center of the large coal-producing territory of the Fifth and Ninth Districts. This was true in respect to demand, prices, car supply and practically every circumstance surrounding the trade, though the general elevation of methods of doing business among both operators and retailers brought about by the periods of government regulation and cooperation continuing from wartime emergencies continued and was even strengthened.

During the first two months of the calendar year prices were up to the government maximum, in spite of the fact that the very beginning of the year had seen very little activity because of the lagging industrial situation. Even after the men at the head of the industries had begun to see that the signing of the armistice and the vanishing of the demand for war-products would only bring about a greater demand for peace-products and reconstruction materials, there was scant call for fuel, and this condition continued during the months of March, April, May and June.

During July the market picked up both for steam and domestic sizes. Dealers said that more deliveries of domestic coal were made in July, 1919, than they had known to be the case in any previous year and that it was only this fact that enabled St. Louis to come through the general bituminous strike as well as it did. Industries, too, quietly began to pile up reserves and at almost every plant in the St. Louis industrial district great stocks of steam sizes began to make their appearance. This was practically the first time that stocking up had been so general among all the factories and some trepidation was felt among industrial managers and coal men as to the safety of storing so much coal and for so long a period, inasmuch as at only one plant was water-storage attempted. No trouble was reported, however, though some of the coal was piled for more than five months. No attempt was made to compile any statistics on the loss in efficiency of the coal stored, though it was pointed out by several big operators at the time that it was a good opportunity to get together figures on many grades of coal which would be of great help to the coal industry later.

SPORADIC STRIKES HURT PRODUCTION

During August sporadic strikes occurred and supply of bituminous dropped off to nothing. By the first of September these labor troubles had ended and operators, dealers and mine workers settled down to one of the busiest and most profitable months they were to know until after the close of the big strike. This was in spite of the fact that car supply was only at about 65 per cent. of normal, but very few mines in the district had their working time cut by the low supply. This continued until the day of the big strike and during the whole two months everything in coal circles revolved at a dizzy pace, dealers and operators being unable to turn around without tripping over eager buyers.

During the time of the general bituminous strike St. Louis got on as well, if not better, than any other big city in the country. Due to the hard work and self-sacrifice of the men in the coal industry, large and small, there was practically no hardship among domestic consumers and only about two per cent. of the city's industrial plants, essential or nonessential, were forced to close and that small percentage represented those improvident ones who had refused to heed the dictates of common sense and the warning of the coal men.

During the last two weeks of December, naturally there was an enormous demand and the year 1920, unlike the year 1919, opened with more orders than could be filled, for all grades, industrial and domestic. Prices, too, fluctuated so much during the year that it was doubtful if the coal industry made profits as large as those of any other basic industry. During January and February prices held firmly to the government maximum for all grades and there was a good absorption, considering the fact that the year had shown indications of starting poorly. March saw a steady decline in dealer business and prices dropped off until the middle of April saw coal being sold in St. Louis for less than it cost to take it out of the mines on the east side. To the mine price was added freight, haulage and storage, and the dealer that made money in coal during April, May and June was the exception.

DULL MARKET CLOSES DOWN MINES

The dead market had its effect on the mines in the southern Illinois and Fifth and Ninth districts. The greater percentage managed to get in from 25 to 35 per cent. of their normal working time, but numbers closed down tightly about the first of May and did not reopen until late in June, when demand showed signs of life and prices began to pick up.

Prices began to climb early in July and when the local strike was declared in August the consumer was paying 50 cents more a ton than he had at any time since the first of March. In September prices finally got back to the government basis and on the first of October mine prices were \$3.25 a ton for prepared sizes and \$2.50 a ton for screenings and mine-run.

Car supply was another circumstance that manipulated the St. Louis market to some extent during the year, as it did every other market in the country. Until the first of September the supply was 100 per cent. at the mines and at that time it dropped to approximately 65 per cent. and continued at that level until the third week in October, when the government commandeered the cars and brought the supply back to 100 per cent. by force. This was the case in the last half of December also. There is no doubt, however, that the lack of cars in September and the first half of October kept prices where they were.

An unusual condition prevailed in the contract business last spring, a fact which may well be noted, because of the unlikelihood of its happening again for a long time. There were as many, perhaps more, closed than in previous years but there was a lagging in coming to terms and this ultimately resulted in benefiting the dealers and operators. This was due to the slow industrial condition.

The most pleasing development of the year was the furtherance of the spirit of cooperation and helpfulness, not only between dealer and operator, but between all classes of coal men and the public. Only to the hard work and the farsightedness of every dealer and operator in this territory can be laid the fact that St. Louis and its tributary districts weathered the long strike and famine without a single case of real hardship or privation, this in spite of the cold weather and resultant large fuel consumption during the whole period of the strike. In return for this service rendered to the community, the public has demonstrated its faith in the men who control this market by failing to file a single "profiteering" complaint against them or to mistrust their explanation

of any increase in price. It is a condition in which very few other dealers in the necessities of life have been fortunate enough to find themselves in these times.

COAL TRAFFIC AT ST. LOUIS, MO.

The greater part of the coal supply of St. Louis is derived from mines within a short distance of that city, and is received via the railroads which traverse the southern part of Illinois. Although Missouri ranked fourteenth in the bituminous coal-producing states last year, St. Louis is not open to its mines. Altogether St. Louis occupies a unique position of isolation so far as the meeting of its coal requirements is concerned, and probably no other large city obtains its coal at such small expense for freight.

Receipts of coal by the several lines of railroad, etc., are thus given by the secretary of the Merchants' Exchange:

Route	1915	1916	1917	1918	1919
Burlington, West					3,750
Burlington, East					672,030
Missouri Pacific	*	*	153,983	134,802	205,794
Baltimore & Ohio S.-W.	757,626	623,936	871,401	884,374	948,235
C., C. & St. L.	113,343	110,709	136,917	127,346	105,273
P., C. & St. L.	460,992	430,788	698,825	569,011	481,872
Illinois Central	1,546,303	1,651,029	1,027,210	1,787,691	927,234
Wabash	272,436	250,050	300,123	230,250	86,004
Louisville & Nashville	578,655	1,089,788	1,515,798	1,247,660	1,020,721
Southern	637,477	1,063,068	1,429,370	1,400,248	759,859
Mobile & Ohio	177,660	243,814	277,358	699,850	523,700
Toledo, St. L. & Western	37,584	61,344	28,359	13,434	169,453
St. Louis & O'Fallon	685,138	790,220	1,050,627	1,092,332	541,378
St. L., I. M. & S. (Ill. Div.) ..	648,176	632,833	642,095	884,254	638,607
St. L., Troy & Eastern	651,438	973,060	1,012,052	1,015,343	463,390
St. L. & Belleville Electric....	230,746	281,581	507,336	519,756	311,640
Chicago & Eastern Illinois....	476,367	380,907	127,409	67,438	48,721
St. Louis & San Francisco....	76,943	89,950	109,284	107,598	86,896
Litchfield & Madison	554,816	755,197	983,451	870,695	626,877
East St. Louis & Suburban ..	9,363	203,989	852,434	914,077	481,264
Illinois Traction System	39,392	38,193	128,840	339,596	400,790
From Ohio River	17,600	13,350			
Total tons	7,972,055	9,683,806	11,853,472	12,905,755	9,503,488

*Included in St. L., I. M. & S. tonnages.

RECEIPTS OF ANTHRACITE INCLUDED IN ABOVE

1905.....158,843 tons	1910.....289,463 tons	1915.....189,478 tons
1906.....174,226 "	1911.....487,030 "	1916.....172,832 "
1907.....265,571 "	1912.....277,683 "	1917.....163,789 "
1908.....236,036 "	1913.....274,423 "	1918.....64,515 "
1909.....236,040 "	1914.....174,694 "	1919.....114,918 "

Of the 1919 anthracite receipts 17,109 tons were shipped through, as compared with 16,079 tons in 1918.

Receipts of Coke: 1904, 171,162 tons; 1905, 222,305 tons; 1906, 328,400 tons; 1907, 371,880 tons; 1908, 162,280 tons; 1909, 171,570 tons; 1910, 191,190 tons; 1911, 192,425 tons; 1912, 190,370 tons; 1913, 190,857 tons; 1914, 139,296 tons; 1915, 121,389 tons; 1916, 215,025 tons; 1917, 217,236 tons; 1918, 168,205 tons.

SAN FRANCISCO STATISTICS AND HISTORICAL REVIEW

The various sources from which this port derived its coal supplies are indicated by San Francisco Chamber of Commerce as follows, in net tons:

THE COAL TRADE

From	1914	1915	1916	1917	1918	1919
British Columbia ..	97,598	147,573	213,442	267,555	82,581	9,070
Australia	123,050	95,329	8,115	2,499	.....	18,099
Great Britain	13,421	3,254	.....	.....	.....	.....
Japan	25,077	20	.....	.....	.....	.....
China	1,000	.....	.....	.....	.....	.....
By rail	39,030	68,055	104,850	94,980	129,705	170,031
Oregon	73	320	.....	.....	.....	.....
Washington	12,637	1,208	33,528	75,344	12,352	197
Domestic, East	60,219	92,128	35,749	36,749	.....	98,438
Total	372,105	407,887	395,684	477,127	224,638	296,105

The exploitation of fuel oil in recent years has practically eliminated coal as a factor in the industrial situation of California. The decline of the coal trade of San Francisco dates from 1900, when the production of oil on the coast began to mount upwards by leaps and bounds. For several years, beginning with 1900, the output of oil in California nearly doubled every year, and since 1903, while the ratio of increase has been smaller, actual output has kept on steadily increasing at the rate of millions of barrels a year.

The change in the status of the coal business in the same period has been equally phenomenal, but in the opposite direction. In 1900 about four times as much coal was received by water at San Francisco as in 1909, the figures for the two years being 1,889,128 tons and 443,961 tons, respectively. Since then the change in tonnage until 1918 was not material. During that year the necessities of the war were strongly reflected in the totals. Almost the only use for coal is for heating, in those few places not using steam (from oil) or gas; the climatic conditions of 1918 and the conservation measures adopted by the Fuel Administration helped to cut this source of consumption to a marked degree. The return to more normal conditions of distribution is reflected in the 1919 figures, which show the largest all-rail and eastern receipts in several years.

TRADE AT TOLEDO IN 1919

The coal trade at Toledo during the year 1919 was not as active as during the previous year, which was the largest lake season on record. The total tonnage moved over the Toledo docks for shipment to the Northwest in 1919 was 7,751,331 tons as compared with 10,088,071 tons in 1918.

Outside of the lake trade the domestic and steam business were about the same as in other localities. Early in the year there was a slump and prices were rather low, but as the surplus stocks were consumed higher prices prevailed. Previous to the bituminous strike suspension there was a runaway market for a few weeks, which was stopped by the federal authorities when the government maximum prices were reestablished.

The tonnage handled over the docks during the year was divided on originating railroads as follows:

B. & O.	905	C. & O.	3,332,690	L. & N.	682,218
H. V.	616,269	N. & W.	1,307,763	S. V. & E.	268,989
Z. & W.	95,327	C. & C.	18,833	Fed. Valley	5,018
T. & O. C.	255,848	B. & O. (O. &		Long Fork	154,406
K. & M.	1,008,769	T. D.)	4,299	Total	7,751,331

Reports of tonnage loaded on the principal docks at Toledo were as follows:

	1919	1918	1917	1916	1915
Hocking Valley	4,277,374	4,990,015	4,764,410	4,031,242	2,658,587
Toledo & O. C.	1,159,102	2,123,411	2,343,761	1,419,032	1,430,000
C. H. & D. (B. & O.)	2,314,855	2,972,615	2,619,480	1,792,646	1,792,646
Total	7,751,331	10,088,071	9,727,651	7,242,920	5,881,233

The coal loaded over the Hocking Valley docks was divided as follows among the producing districts: Hocking Valley, 669,425 tons; Kanawha & Michigan, 182,586; B. & O., 198,297; C. & O., 2,726,257; N. & W., 492,161; Kanawha & West Virginia, Pennsylvania and C. & C. (combined), 1,667; T. & O. C., 9,533. In addition 113,808 tons were loaded over the Hocking Valley docks, which was conveyed to Toledo over the Pennsylvania, making a total of 4,393,644 tons loaded over the docks.

WEST VIRGINIA TRADE IN 1919

The coal year of 1919-20 was an eventful one in the annals of the West Virginia coal history. It was a year fraught with discouragement and disappointment to those who had the most at stake. At its advent it seemed to be a year of opportunity, yet from one cause and another the industry was subjected to every vicissitude imaginable, from lack of market to clashes between operators and miners and finally from government control and unparalleled transportation disabilities. The pendulum swung from one extreme to another. Under ordinary circumstances the coal year would have been a prosperous one to those engaged in the coal mining industry in West Virginia. But circumstances were far from ordinary. First, labor disturbances and the cessation of mining operations in all organized mining fields caused a break. Government control, continued even after the strike was terminated, instead of aiding the industry, exerted a detrimental effect. Worst of all, car shortages precluded anything like maximum operations so that the industry had almost insuperable obstacles to surmount.

There has been undoubtedly an expansion of the industry in West Virginia despite the fact that the mining of coal owing to a variety of causes has not been attended by large profits. Even the older companies have gone ahead with plans for increased production, believing that the day would come when they would not be fettered and shackled as they have been during the last year.

PRODUCTION PULLED DOWN

Figures covering production during the fiscal year ending June 30, 1919, are no criterion of conditions existing in West Virginia, for during a period of six or eight months of that calendar year there was scarcely any market for coal and producers had no incentive to mine a large output. While demand made for a larger output during the last six months of the year, circumstances seemed to conspire against a large production during that period, a car shortage part of the time effectually checking production and a six weeks' period of idleness in all union fields further clipping off many thousand tons from the year's output. With less occasion for speeding up production, indeed with the trade well stocked with coal and with a mild winter, it was not to be wondered at that there was rather a decided drop in the annual output during the fiscal year and an even more pronounced decrease in the amount mined during the calendar year as compared with 1918.

Under such circumstances the output of West Virginia mines for the fiscal year—73,943,339 tons—was larger than might have been expected although it showed a decrease as compared with the production of 80,041,640 tons for the previous fiscal year. Ten counties showed increases during the fiscal year, and it was in those counties that the growth of the industry during the fiscal period was reflected. The counties in which increases were recorded owing to new ventures were Braxton, Boone, Summers, Webster, Clay, Logan, Monongalia, Upshur, Randolph and Wetzel Counties.

NEW DEVELOPMENTS, ADD TO TOTALS

It will be observed in the following tabulation of figures covering production for the fiscal year of 1919 and the preceding fiscal year that the only apparent

gains are in sections really just being opened up on a large scale, yet in some of the larger fields where losses are shown there has also been a general increase in the number of operations. However, the potential increase in such counties is not apparent because of losses sustained through causes before enumerated.

County	1919	1918	County	1919	1918
Barbour	1,231,823	1,362,068	Mineral	430,797	781,348
Boone	1,229,174	1,061,602	Mingo	2,229,646	3,104,419
Braxton	309,108	255,774	Monongalia	2,007,169	1,687,153
Brooke	1,326,429	979,151	Nicholas	147,295	199,611
Clay	449,434	445,862	Ohio	637,309	741,076
Fayette	8,056,894	8,828,080	Preston	1,302,701	1,400,961
Gilmer	37,231	71,159	Putnam	285,075	426,633
Grant	117,734	263,653	Raleigh	6,227,326	6,790,765
Greenbrier	33,695	37,311	Randolph	916,315	874,760
Harrison	4,411,765	5,077,435	Summers	24,210	5,338
Kanawha	4,858,265	5,758,926	Taylor	1,021,539	1,187,536
Lewis	32,049	33,830	Tucker	1,117,058	1,297,211
Lincoln	189,858	238,472	Upshur	407,466	283,438
Marion	4,397,953	4,533,466	Wayne	25,174	83,170
Marshall	939,281	942,974	Webster	6,599	6,119
Mason	117,100	174,097	Wetzel	43,415	30,000
McDowell	16,476,635	17,812,416	Wyoming	886,009	1,085,915
Mercer	2,682,148	2,949,936			

The coal industry in West Virginia faced a very uncertain future at the beginning of 1919. Coal was not in demand. Industries had large reserve stocks, accumulated during the war period. The weather was extremely mild. There was a slight market flurry about the middle of January when the weather grew colder for a brief period. In the high volatile fields, however, it was found impossible to take advantage of the somewhat heightened demand owing to the fact that zone regulations were still in force. As vessels were largely being utilized in getting men and supplies back from France cargo space was lacking for exporting of coal.

The government waited until the market was virtually dead and then proceeded to remove all restrictions as to price and shipment. Little coal could be sold because the railroads and other classes of consumers were waiting for the price to sink to still lower levels. Feeling that, under the circumstances, their coal was worth more in the ground than in such a dull market, many producers adopted a policy of watchful waiting.

May and June brought much improvement in the situation. The demand was heavier in all quarters and the output of the various fields was being placed under contract. Indeed before the end of the fiscal year virtually all the output of the various smokeless fields was under contract. A shortage of man power began to develop early in July. In July the Navy announced it proposed to commandeer a large tonnage of West Virginia smokeless coal. That disarranged plans in general for supplying customers with the smokeless grade. Just at a time when conditions seemed propitious for a large production the strike of railroad shopmen brought production to a virtual standstill in the southern part of West Virginia. Although not affected by the strike, northern West Virginia mines during part of August suffered from a shortage of cars. By the end of the month gas and splint coals were in especially strong demand at tidewater points, and smokeless producers were guarding against a runaway market on lump and egg.

The most serious handicap under which mines generally labored during the greater part of September was a car shortage. There was a general strike of

Kanawha district miners early in the month. Until the middle of December, Kanawha production was at rather low level because of labor troubles and a shortage of cars. Although it became manifest during September that there was a growing demand for steam coal, large concerns failed to make extensive purchases. October found the demand for coal of all kinds and all grades unusually heavy but, with an utterly inadequate car supply, production on an average was not much over 75 per cent.

Production of course came to a standstill in the union fields of West Virginia on November 1. Yet in the five non-union fields of the state, not only was there no cessation of work but operators and miners joined in an effort to increase production and were successful in doing so because of the increased number of cars available. Production was kept up to top speed and the maximum of the year was reached in the unorganized fields, while the strike was in progress. On the other hand production was comparatively limited in the union fields, few miners returning to work. No praise was ever bestowed upon either the operator or the miners of southern West Virginia by governmental authorities for their accomplishment during the strike. On the other hand not only were operators forced to produce coal at a price which left little or no room for profit, but, through the large volume of coal confiscated and diverted, many mines faced financial stringency and for months were unable to secure payment for the coal they had striven so hard to produce.

COAL OUTPUT OF PENNSYLVANIA

Even in the face of heavy losses incident to the bituminous strike of last year and the post-armistice depression in the early part of 1919, the coal tonnage of the State of Pennsylvania ran a close second to the total production of England. In 1918, the curtailment of output on the other side, combined with the large increase in the output of this state, put Pennsylvania well in the lead. While the development of other newer coal fields and the substantial growth of mining activity therein has reduced the proportion of Pennsylvania's tonnage below the fifty-odd per cent. that was so long characteristic of its annual business, the production continues to very nearly equal that of all other states combined. Pennsylvania is the seat of the oldest American coal operations continuing in active employment and has available the most complete returns of mining operations. As is well known the fields embrace two most distinctive coal areas—the anthracite and the bituminous mining regions—each with its array of statistical information and its individual trade history. The latest available data covering both classes of production will be found in this volume.

PENNSYLVANIA BITUMINOUS COAL PRODUCTION

Bituminous production by counties for the state of Pennsylvania since 1914 has been as follows:

County	1914	1915	1916	1917	1918
Allegheny	16,808,202	17,417,815	17,007,431	17,836,377	17,375,035
Armstrong	4,579,389	5,159,882	5,430,188	5,574,861	6,051,753
Beaver	101,809	87,891	91,553	129,163	128,572
Bedford	634,219	635,791	721,587	947,053	1,050,528
Blair	308,945	308,541	435,792	271,598	279,817
Butler	981,704	1,036,877	1,180,008	1,201,963	1,397,927
Cambria	18,034,487	18,716,451	19,588,350	19,730,770	20,569,253
Center	1,264,075	1,430,749	1,819,007	1,999,407	1,984,664
Clarion	1,341,392	1,291,119	1,368,544	1,380,494	1,607,641
Clearfield	7,149,023	8,022,894	8,876,823	9,336,533	9,376,429

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County	1914	1915	1916	1917	1918
Clinton	326,545	359,275	422,062	401,812	360,123
Elk	963,208	1,045,554	937,583	907,187	968,808
Fayette	23,336,180	28,424,067	34,249,848	32,083,027	32,925,888
Greene	290,497	546,008	744,860	900,378	1,269,425
Huntingdon	851,128	1,010,750	962,332	1,155,602	1,371,562
Indiana	9,422,996	9,558,857	11,022,780	12,053,766	12,743,190
Jefferson	5,089,623	4,895,409	5,764,525	5,551,658	5,140,833
Lawrence	123,987	131,746	614,994	132,929	107,068
Lycoming	27,795	.....	*39,005	*47,151	*31,299
Mercer	716,995	694,411	†	527,421	690,785
Somerset	10,238,763	10,343,369	9,340,568	9,454,537	10,264,083
Tioga	679,221	788,003	829,561	866,803	834,385
Washington	15,495,674	15,898,719	18,119,353	21,513,603	23,537,263
Westmoreland	28,995,427	29,892,561	30,499,703	28,027,782	28,121,234
Other counties and small mines	221,980	263,398	228,967	416,267	363,098
Total, net tons	147,983,294	157,955,137	170,295,424	172,448,142	178,550,741

*Includes Bradford County.

†Included under Lawrence County.

The estimated production in 1919 was 145,300,000 tons.

HEADQUARTERS OF MINE INSPECTION DISTRICTS

The Pennsylvania coal fields are divided by the state mining department into 55 districts. The anthracite regions are split up into 25 districts, each in charge of an inspector, and the bituminous into 30 districts. The district headquarters in both fields are as follows:

ANTHRACITE: 1st, Forest City; 2nd, Carbondale; 3rd, 4th, 5th and 6th, Scranton; 7th, Taylor; 8th, Pittston; 9th, West Pittston; 10th and 11th, Kingston; 12th, Wilkesbarre; 13th and 14th, Nanticoke; 15th and 16th, Hazleton; 17th, Lansford; 18th, Coaldale; 19th, Pottsville; 20th, Mahanoy City; 21st, Shenandoah; 22nd, Centralia; 23rd, Mount Carmel; 24th, Shamokin; 25th, Lykens.

BITUMINOUS: 1st, Monongahela; 2nd, Latrobe; 3rd, Mercer; 4th, Du Bois; 5th, Uniontown; 6th, Johnstown; 7th, Crafton; 8th, Philipsburg; 9th, Connellsville; 10th, Altoona; 11th, Greensburg; 12th, Punxsutawney; 13th, Elizabeth; 14th, Freeport; 15th, Patton; 16th, Brownsville; 17th, Pittsburgh; 18th, Tyrone; 19th, Irwin; 20th, Somerset; 21st, Charleroi; 22nd, Dravosburg; 23rd, Mason-town; 24th, Johnstown; 25th, Indiana; 26th, Bridgeville; 27th, Belle Vernon; 28th, Punxsutawney; 29th, Pittsburgh; 30th, Johnstown.

DETAILS OF BITUMINOUS DISTRICTS OF PENNSYLVANIA, 1919

FIRST		SECOND	
Company	Gross Tons	Company	Gross Tons
Ellsworth Collieries Co., Pittsburgh..	1,384,736	Jamison C. & C. Co., Greensburg ...	741,800
Pittsburgh Coal Co., Pittsburgh	966,431	Hostetter-Conns. Coke Co., Scottdale..	570,783
Union C. & C. Co., Bentleyville	706,008	H. C. Frick Coke Co., Scottdale	506,137
Valley Camp Coal Co., Van Voorhis..	397,396	Keystone C. & C. Co., Greensburg ..	463,257
Yough. & Ohio Coal Co., Charleroi..	358,328	Shenango Furnace Co., Wilpen	383,828
Vesta Coal Co., California	216,020	Latrobe-Conns. C. & C. Co., Greensb.	350,042
Warner-Yough. Coal Co., Charleroi..	193,190	Graff Mining Co., Blairsville	313,646
Acme C. & C. Co., Pittsburgh	170,978	New Alexander Coke Co., Greensburg	213,047
South Fayette Coal Co., Finleyville..	103,144	Ramsey Coal Co., Inc., Ligonier	201,478
Eclipse Gas Coal Co., Venetia	73,538	Westm'd-Conns. C. & C. Co., Ligonier	178,353
Home Coal Co., Monongahela	52,908	Ligonier-Diam'd C. & C. Co., Ligonier	157,435
Star Fuel Co., Courtney	31,226	Bradenville C. & C. Co., Blairsville..	153,854
Smaller operators	62,533	Saxman C. & C. Co., Latrobe	152,807
Total	4,715,741	Donohoe Coke Co., Greensburg	128,061

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Company	Gross Tons
Greensb.-Conns. C. & C. Co., Pittsb..	125,357
Atlantic Crushed Coke Co., Greensb..	119,115
Mt. Pleasant Coke Co., Greensburg.	116,791
Mt. Pleas't By-Prod. C. Co., Greensb.	114,852
Vogele Coal Co., Ligonier	102,725
St. Clair Coal Co., Ligonier	100,401
Seger Bros. Coal Co., Millwood	84,842
Oakville C. & C. Co., Latrobe	76,968
Whyel Coke Co., Uniontown	64,995
Conns. Coke & Fuel Co., Conns. ...	62,091
Unity-Conns. Coke Co., Latrobe	61,051
Westm'd-Fayette C. & C. Co., Greens.	51,322
Ridge Coal Co., Latrobe	48,124
Greensb.-East'n Coal Co., Greensb. ...	46,148
Railway Steel Spring Co., Latrobe ..	41,597
H. A. Humphries C. & C. Co., Derry	33,128
Smaller operators	160,197
Total	5,923,527

THIRD

Acme Gas Coal Co., Rimersburg	261,654
Sharon Coal & Limestone Co., Mercer	240,264
Allegheny River Min. Co., Kittanning	234,010
Mercer Iron & Coal Co., Stoneboro..	191,124
Keystone Mining Co., East Brady ..	170,163
Mohawk Mining Co., Kittanning ...	117,744
Erie C.M. Co., Butler	116,608
Lake Trade C.M. Co., Helliard	81,000
Argentine Coal Co., Windber	80,484
Wallwork Mining Co., Summerville..	75,794
Red Bank Coal Co., East Brady	68,488
W. J. James, Franklin	66,247
Samuel Snerwin, Karns City	65,554
Zenith Coal Co., Butler	65,554
Monterey Coal Co., Leechburg	56,851
Queenstown Coal Co., East Brady ...	56,697
Eagle Coal Co., East Brady	56,264
Cherry Run Mining Co., Rimersburg.	53,583
Clarion C.M. Co., Clarion	49,988
Standard Coal Co., Grove City	49,606
Church Hill Mining Co., Leechburg.	48,627
Chestnut Ridge C. Co., Rimersburg..	47,827
F. P. Filer & Co., Mercer	47,187
Cherry Run Fuel Co., Rimersburg ..	40,614
Bruin Coal Co., Bruin	38,831
Cunningham Coal Co., Chicora	38,810
Rescent Portl'd Cem't Co., Wampum	37,180
Lawsonham Coal Co., Lawsonham ...	36,429
Scotch Hills Coal Co.	35,942
Mizener Coal Co., Claytonia	34,826
Butts Cannel Coal Co., Cleveland, O..	33,532
N. Pittsburgh Realty Co., Pittsburgh.	33,332
Leesburg Coal Co., Newcastle	33,240
Kittanning Mining Co., Kittanning..	30,952
Widnoon Mining Co., Reynoldsville..	30,588
Smaller operators	839,446
Total	3,386,288

FOURTH

Ruf. & Susq. C. & C. Co., Du Bois..	564,482
Shawmut Mining Co., St. Marys	533,659
Northw. M. & Ex. Co., Du Bois	522,148
Pennsy Coal Co., Clarion	253,350
Kettle Creek C.M. Co., Bitumen	239,725
Cascade C. & C. Co., Buffalo	226,737
Allegh. River Min. Co., Kittanning..	172,347
Panther Run Coal Co., Ridgway	113,174
Pawnee Coal Co., Brookville	104,624
Jefferson Coal Co., Coal Glen	64,839

Company	Gross Tons
Toby C.M. Co., Brockwayville	53,221
McConnell Coal Co., Du Bois	43,540
Penfield C. & C. Co., Penfield	42,080
Wallwork Coal Co., Summerville....	36,711
Bennetts Branch Coal Co., Dent's Run	35,328
McKnight Coal Co., Brockwayville ...	32,503
Harvey Coal Corp., Strattonville	30,076
Smaller operators	530,465
Total	3,599,009

FIFTH

H. C. Frick Coke Co., Scotdale	3,244,442
W. J. Rainey, Uniontown	707,776
Oliver & Snyder Steel Co., Union'tn.	606,144
Fancy Hill Coal Works, Cheat Haven	126,337
Oliphant C. & C. Co., Uniontown ...	125,778
Amend Coal Co., Greensburg	119,044
Hecla C. & C. Co., Pittsburgh	103,998
Brownfield C. & C. Co., Uniontown..	76,500
Locust Hill Coal Co., Point Marion..	56,665
Harah C. & C. Co., Out Crop	56,337
Westm'd-Fayette C. & C. Co., Greens.	45,232
Smiley Coal Co., Uniontown	44,321
Amer. Manganese Mfg. Co., Dunbar ..	41,472
Meadow Brook Fuel Co., Uniontown..	41,400
Beal Coal Co., Uniontown	38,840
Evans C. & C. Co., Uniontown	36,604
Liberty C. & C. Co., Uniontown	36,109
Playford Coal Co., Greensburg	34,677
Deyarman Coal Co., Uniontown	31,664
Stern Coal Co., Uniontown	26,532
Smaller operators	356,002
Total	5,956,764

SIXTH

Cambria Steel Co., Johnstown	1,096,321
Logan Coal Co., Beaverdale	674,910
Penn. C. & C. Corp., Ehrenfeld	417,973
Md. Coal Co., of Pa., St. Michaels..	268,370
Beaver Run Coal Co., Beaverdale ..	220,058
Stineman C. & C. Co., South Fork...	196,169
Stineman C.M. Co., South Fork	145,857
Henriette C.M. Co., Dunlo	118,592
Telford Coal Co., Johnstown	116,309
Mountain Coal Co., Gallitzin	114,281
Riverside C.M. Co., South Fork	111,845
Argyle Coal Co., Gallitzin	105,848
Boucher-Cortright Coal Co., Beaverd'l	94,498
South Fork C.M. Co., South Fork ..	85,326
Conemaugh C.M. Co., Johnstown ..	83,414
Harvey C. Stineman, South Fork ..	83,083
Loyal Hanna C. & C. Co., Onalinda.	71,841
Penelec Coal Co., Johnstown	60,334
So. Fork Bit. Coal Co., So. Fork ...	48,180
Citizens Coal Co., Johnstown	42,208
Forks C.M. Co., South Fork	41,668
Scalp Level C.M. Co., Windber	36,159
Mineral Point Coal Co., Min'l Point.	33,074
South Fork Colliery Co., South Fork	31,522
Flenner Coal Co.	31,078
Smaller operators	122,668
Total	4,449,781

SEVENTH

Carnegie Coal Co., Pittsburgh	1,374,327
Pittsburgh Coal Co., Pittsburgh	749,543
Pitts. & East. Coal Co., Clarion	388,157
Am. Zinc & Chem. Co., Pittsburgh ..	254,545
Bertha Coal Co., Pittsburgh	244,243
Fayette Coal Corp., Pittsburgh	217,072

Company	Gross Tons
Pitts. & Erie Coal Co., Pittsburgh...	200,000
Verner C. & C. Co., Pittsburgh	175,625
Bulger Block Coal Co., Pittsburgh ..	161,173
Greensb. Conns. C. & C. Co., Pittsb..	149,329
*Harmon Creek Coal Co., Pittsburgh..	138,251
W. H. Shinn Coal Co., Pittsburgh	115,940
Superior Coal Co., Pittsburgh	103,604
Harmon Creek Coal Co., Pittsburgh..	96,259
Burgettstown Coal Co., Pittsburgh ..	92,502
Bess Etta Coal Co., Pittsburgh	85,238
McDonald Coal Co., McDonald	74,741
*Hanover Coal Co., Bellaire, O.	68,985
Ollett Bros. Coal Co., Bridgeville ..	68,391
County Coal Co., Carnegie	54,801
*St. Clair Mining Co., Ligonier	54,691
Hugh McHugh Coal Co., Rennerdale ..	50,582
Midway Coal Co., Bridgeville	45,557
*Pitts.-Hanover Coal Co., Pittsburgh..	45,243
Hanlin Coal Co., Pittsburgh	41,915
P. Y. & C. Coal Co., Crafton	34,129
Pitts. & West. Min. Co., Pittsburgh..	34,100
*C. P. Mayers Brick Co., Bridgeville ..	26,003
Smaller operators	126,151
Total	5,271,597
*Stripping operations.	

EIGHTH

Lehigh Val. Coal Co., Wilkes-Barre..	330,081
Morrisdale Coal Co., Morrisdale	250,082
Clearfield Bit. Coal Corp., Clearfield..	249,342
Peale, Peacock & Kerr, Inc., St. Ben- edict	226,611
Pa. C. & C. Corp., Cresson	212,566
Morris Run CM. Co., Wilkes-Barre..	196,069
Blossburg Coal Co., Du Bois	152,518
Cunard Coal Co., Morrisdale	130,617
Keley Bros. Coal Co., Snow Shoe..	121,446
Moravian Coal Co., Clarence	120,155
Fall Brook Coal Co., Antrim	109,195
Harbison-Walker Refractories Co., Woodland	104,823
Victoria CM. Co., Philipsburg	85,001
Bald Hill Coal Co., St. Benedict	79,746
Ashman Coal Co., Philipsburg	68,220
Liberty CM. Co., Madera	57,750
Goshen Coal Co., Clearfield	47,000
Guion Coal Co., Philipsburg	46,223
H. B. Scott, Philipsburg	43,378
O'Donnell Bros., Morris Run	42,314
Thos. J. Lee, Philipsburg	41,014
A. B. Lansberry, Woodland	38,598
Roden CM. Co., Philipsburg	37,600
Royal CM. Co., St. Benedict	33,458
E. J. Goodyear, Munsons	29,902
Kato Coal Co., Curwensville	29,500
Ghem Coal Co., Philipsburg	28,123
Jacob Smutzinger	27,290
Scotac Mining Co., Williamsport ..	26,976
Maryland C. & C. Co., Philadelphia..	25,987
Smaller operators	674,246
Total	3,667,986

NINTH

H. C. Frick Coke Co., Scottdale	2,318,704
Washington C. & C. Co., Star Junct..	952,139
Yough., & Ohio C. Co., Cleveland, O.	444,044
Westmoreland Coal Co., Irwin	426,984
W. J. Rainey Est., Uniontown	388,142
Whyel Coke Co., Uniontown	190,564

Company	Gross Tons
Jamison Coal & Coke Co., Greensburg	156,200
Brownfield C. & C. Co., Uniontown..	139,334
Amer. Manganese Mfg. Co., Dunbar..	127,616
Meicroft Coal Co., Pittsburgh	109,539
Vanderbilt C. & C. Co., Connellsville	81,397
Keystone C. & C. Co., Greensburg...	60,715
Sagamore Coal Co., Indian Head	49,039
Scottdale C. & C. Co., Scottdale	43,746
Mahoning C. & C. Co., Connellsville..	38,813
Byne C. & C. Co., Scottdale	38,411
Indian Cr. C. & C. Co., Indian Head..	35,299
Summit Conns. C. & C. Co., Conns.	34,805
Smaller operators	187,090
Total	5,822,581

TENTH

Penn. C. & C. Co., New York, N. Y..	558,172
Solman Shaft Coal Co., Minersville..	472,502
Shoemaker CM. Co., Philadelphia	324,687
C. A. Hughes & Co., Altoona	197,895
Portage CM. Co., St. Benedict	187,895
Forge CM. Co., Philadelphia	166,852
Miller Coal Co., Philadelphia	145,808
Inland Coal Co., Greensburg	128,431
Beachley Coal Co., Johnstown	111,374
Altoona C. & C. Co., Altoona	76,433
Taylor & McCoy C. & C. Co., Balto.	76,060
W. H. Hughes, Altoona	74,052
Glen White C. & L. Co., Balto., Md.	65,076
W. H. Piper & Co., Philadelphia	62,258
Geo. Pearce & Sons, Inc., Johnstown	56,331
Plymouth CM. Co., Philadelphia	55,917
Dexcar CM. Co., New York, N. Y..	53,640
Portage Smokel. Coal Co., Beaverdale	46,799
Bradley Mine Coal Co., Altoona	42,072
Russet Coal Co., Altoona	42,011
Thermal Smokel. Coal Co., Johnst'n.	41,128
Trout Run Coal Co., St. Benedict ..	37,036
Juniata Coal Co., Williamsburg	36,788
Blair Cambria Coal Co., New York..	35,373
Penker Coal Co., Portage	33,538
Brown & Groke Est., Philade:phia ..	32,757
Smaller operators	143,637
Total	3,299,779

ELEVENTH

H. C. Frick Coke Co., Scottdale	2,680,053
Keystone C. & C. Co., Greensburg ..	1,142,599
Jamison C. & C. Co., Greensburg	801,930
Greensburg Coal Co., Greensburg ..	453,327
Mt. Pleasant-Connellsville Coke Co., Greensburg	273,683
Hecla C. & C. Co., Pittsburgh	118,074
Clare Coke Co., Greensburg	89,750
Youghiogeny C. & C. Co., Dawson..	61,124
West Penn By-Product Coke Co., Pittsburgh	28,875
J. M. Williams Coal Co., Elbon	26,820
Smaller operators	160,993
Total	5,827,428

TWELFTH

Roch. & Pitts. C. & I. Co., Punx'y..	636,979
Northw. Min. Exc. Co., Dubois	524,127
Clearfield Bit. Coal Corp., Clearfield	521,183
Jeff. & Clear. C. & I. Co., Punx'y..	402,899
Cascade C. & C. Co., Sykesville	302,599
Penn. C. & C. Corp., Cresson	158,418
Banks Coal Co., Punxsutawney	144,017

THE COAL TRADE

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Company	Gross Tons
Punxsutawney CM. Co., Punxsut'y.	115,974
Ellsworth Dunham C. Co., St. Bened't	95,535
Bowersville Coal Co., Punxsutawney.	72,525
Superior Coal Co., Glen Campbell	67,104
Urey Ridge Coal Co., Glen Campbell	55,223
Hillsdale C. & C. Co., Glen Campbell	51,731
Onondaga CM. Co., Punxsutawney..	51,490
McClure & Tyson Coal Co., Big Run	48,810
M. Burns Estate, Houtzdale	47,040
H. E. Clark, Glen Campbell	45,079
Clearfield Colliery Co., Clearfield	43,668
Locust Colliery Co., Philadelphia	38,554
Pyramid CM. Co., Clearfield	35,454
Cassidy Coal Co., Curwinsville	33,839
Reed Colliery Co., Berwindale	30,600
Eyre Collieries Co., Clearfield	28,263
Susquehanna Fuel Co., Glen Campbell	28,304
Thomson & Lea CM. Co., Lajose	27,431
Gipsy Coal Co., Glen Campbell	26,083
Smaller operators	312,450
Total	3,942,079

THIRTEENTH

Pittsburgh Coal Co., Pittsburgh	1,864,532
Hillman C. & C. Co., Pittsburgh	501,044
Diamond C. & C. Co., Pittsburgh	378,260
Pitts. Term. R.R. & C. Co., Pittsburgh	209,477
Consumers Fuel Co., Pittsburgh	171,038
Peters Creek Gas Coal Co., Pittsburgh	151,697
Smaller operators	130,886
Total	3,406,484

FOURTEENTH

Saltsburg CM. Co., Edri	326,359
Allegheny Riv. Min. Co., Kittanning.	260,647
Crucible Fuel Co., Hite	227,014
Pittsburgh Plate Glass Co., Pittsburgh	197,547
McFetridge Bros. Coal Co., Creighton	179,397
Pine Run (Lewis Mine) Co., Vandergrift	176,524
Penn. Salt Mfg. Co., Philadelphia...	136,875
Cochran Coal Co., Salina	127,643
Keystone Coal Co., York	124,580
Maher C. & C. Co., Leechburg	119,950
Kiskiminetas Coal Co., Blairsville	109,450
Avonmore C. & C. Co., Leechburg	109,143
Allegheny C. & C. Co., Brackenridge	102,379
Armstrong Co. Coal Co., Pittsburgh.	95,613
Mitchell-Watson Coal Co., Saltsburg.	92,971
Park Coal Co., Leechburg	90,159
Kerr Coal Co., Freeport	85,418
U. S. Aluminum Co., New Kensington	69,914
Paulton CM. Co., Leechburg	68,501
West Tarentum Fuel Co.	65,328
Apollo CM. Co., Salina	62,104
Ben Franklin Coal Co., Freeport	59,327
Conemaugh Coal Co., Blairsville	57,568
Valley Coal Co., Weedville	57,199
Johnetta Brick & Coal Co., Pittsburgh	55,168
West Penn CM. Co., Apollo	53,217
Logansport Coal Co., Pittsburgh	53,175
Dalliba Coal Co., Blairsville	49,773
Aladdin C. & C. Co., Leechburg	48,536
Buller Jct. Coal Co., Leechburg	44,213
Pine Run C. & Coke Co., New Beth.	42,731
Century Coal Co., Pittsburgh	40,756
W. Leechburg Steel & Tin Plate Co., Leechburg	40,660
Gilpen Coal Co., Leechburg	32,565

Company	Gross Tons
Dark Hollow Coal Co., Pittsburgh...	31,581
West Penn Mining Co., Leechburg...	31,091
Bagdad C. & C. Co., Leechburg.....	30,730
Amer. Sheet & Tin Plate Co., Pittsb.	30,072
Provident Coke & Min. Co., Kelly Sta.	27,022
Raridan Coal Co., Logansport	25,422
Smaller operators	355,971
Total	3,995,043

FIFTEENTH

Pa. C. & C. Corp., Cresson	952,587
Barnes & Tucker Co., Barnesboro	459,663
Sterling Coal Co., Elmora	296,733
Carrolltown Coal Co., St. Benedict..	241,766
Rich Hill Coal Co., Barnesboro	226,214
Cherry Tree Coal Co., St. Benedict.	202,279
Madeira Hill CM. Co., Philipsburg..	179,342
Duncan Spangler Coal Co., Spangler.	159,376
Reorgan. Co.—East. Bit. CM. Bonds, Altoona	132,982
Watkins Coal Co., New York, N. Y..	130,904
Barnes Coal Co., Barnesboro	114,145
Empire CM. Co., Clearfield	113,300
Clearfield Bit. Coll. Corp., Clearfield.	111,659
Jos. H. Reilly Coal Co., Spangler	93,686
Inland Coal Co., Gallitzin	92,592
Cymbria Coal Co., Altoona	92,535
Watkins CM. Co., New York, N. Y..	89,547
Fallen Timber Coal Co., Philadelphia	68,600
Oak Ridge C. & C. Co., Hastings	64,689
Hastings C. & C. Co., Cherry Tree.	54,724
Binder CM. Co., Carrolltown	44,004
Caldwell Smokel. Coal Co., Ebensburg	40,779
Lenox Coal Co., Johnstown	38,431
Wood & Bougher Coal Co., Barnesb'o	36,376
Nanty-Glo CM. Co., Ebensburg	35,870
Logan Coal Co., Beaverdale	28,732
Smaller operators	348,581
Total	4,460,296

SIXTEENTH

H. C. Frick Coke Co., Pittsburgh	3,252,918
Tower Hill Conns. Coke Co., Un't'n.	634,723
Thompson Conns. Coke Co., Pitts.	598,232
W. J. Rainey, Uniontown	590,182
Hecla C. & C. Co., Pittsburgh	426,960
Republic I. & S. Co., Uniontown	409,995
Brier Hill Coke Co., Brier Hill	406,205
Pittsburgh Steel Co., Pittsburgh	331,512
Conns. Cent. Coke Co., Pittsburgh..	344,068
Taylor C. & C. Co., Uniontown	283,544
Orient Coke Co., Uniontown	265,968
La Belle Coke Co., Steubenville, O.	198,288
Struthers C. & C. Co., Fairbank	157,025
Century Coke Co., Uniontown	122,850
Husted-Semans C. & C. Co., Un'town	110,825
Fayette Coke Co., Uniontown	94,537
Union Conns. Coke Co., Uniontown	74,284
Etna Conns. Coke Co., Uniontown..	69,903
Superior Conns. Coke Co., Un'town.	55,475
Champion Conns. Coke Co., Brownsv.	52,088
Luzerne C. & C. Co., Pittsburgh	35,889
Smaller operators	5,863
Total	8,570,354

SEVENTEENTH

Pitts. Ter. R.R. & C. Co., Pittsburgh.	1,453,326
Pittsburgh Coal Co., Pittsburgh	745,950
Yough. & Ohio Coal Co., Pittsburgh.	441,532

Company	Gross Tons
Chartiers Creek Coal Co., Pittsburgh	229,467
Lindley Coal Co., Pittsburgh	142,938
Country Club Coal Co., Pittsburgh	83,674
Fair Haven Coal Co., Fair Haven	73,721
Bruceton Fuel Co., Broughton	46,384
Ivill Coal Co., Pittsburgh	32,354
Smaller operators	170,869
Total	8,430,321

EIGHTEENTH

Rockhill C. & I. Co., Robertsdale	490,806
Liberty CM. Co., Madera	356,648
Berwind-White CM. Co., Houtzdale	268,076
Imperial Coal Corp., New York, N. Y.	165,610
Jas. M. McIntyre & Co., Six Mile Run	158,790
Irvana C. & C. Co., Rosebud	156,755
Joseph E. Thropp, Saxton	153,087
Bulah Shaft Coal Co., Ramey	128,900
Colonial Iron Co., Riddlesburg	123,436
Grampian CM. Co., Clearfield	121,367
Carbon C. & C. Co., Dudley	107,520
Langdon Coal Co., Huntingdon	96,680
Yorkshire Coal Co., Madera	89,240
E. Eichelberger & Co., Saxton	83,784
Madeira-Hill CM. Co., Philipsburg	70,373
Hale Coal Co., Philadelphia	61,172
Betz CM. Co., Madera	59,108
Cedar Hill CM. Co., Osceola Mills	47,115
Maryland C. & C. Co., W. Moshannon	45,030
J. H. Miller, Lewiston	42,955
Bear Run CM. Co., Osceola Mills	42,254
Middlethian Coal Co., Dudley	41,500
Regal CM. Co., Ramey	40,935
Mt. Equity C. & C. Co., Riddlesburg	37,490
Schipper Bros. CM. Co., Boston, Mass.	36,177
Broad Top C. & M. Co., Huntingdon	35,909
Janesville Coal Co., Philadelphia	35,302
Boston Collieries Corp., Clearfield	35,210
Stand. Moshannon Coal Co., Saltsburg	34,009
Craig-Gould Coal Co., Brisbin	31,948
W. R. Gallagher & Bros., Smith Mills	30,100
Smaller operators	890,340
Total	4,165,612

NINETEENTH

Westmoreland Coal Co., Irwin	2,349,708
Ocean Coal Co., Philadelphia	751,402
Pittsburgh Coal Co., Pittsburgh	550,601
Cambria Steel Co., Johnstown	533,547
Hillman C. & C. Co., Pittsburgh	437,240
Irwin Gas Coal Co., Greensburg	375,468
Keystone C. & C. Co., Greensburg	325,634
Delmont Gas Coal Co., Pittsburgh	268,663
W. B. Skelly Coal Co., Export	108,492
Irwin Valley Gas Coal Co., Connells	44,456
Export Mining Co., Greensburg	37,954
Edwards Coal Co., Greensburg	37,294
Eisaman Coal Co., Greensburg	31,349
Howard Gas Coal Co., Greensburg	30,456
Byrne C. & C. Co., Scottdale	28,594
Westmoreland Gas Coal Co., Pittsb.	28,353
Camberdifi Coal Co.	25,770
Smaller operators	109,948
Total	6,074,160

TWENTIETH

Consol. Coal Co., Baltimore, Md.	1,125,820
Hillman C. & C. Co., Pittsburgh	821,489
Quemahoning Coal Co., Somerset	608,395

Company	Gross Tons
Davis C. & C. Co., Baltimore, Md.	276,770
Penn Smokel. Coal Co., Pittsburgh	211,271
Quemahoning Creek Coal Co.	181,697
Baker-Whitley Coal Co., Balto., Md.	169,966
Wilbur CM. Co., Hooversville	148,103
Knick. Sml. Coal Co., Hooversville	138,248
Somerset Mining Co., Hooversville	129,456
Stauffer Quemahoning C. Co., Listie	108,818
C. J. Rowe & Bros., Meyersdale	106,823
Hillworth Coal Co., Acosta	106,210
Atl. Big Vein Coal Co., Meyersdale	94,161
Penn. Smithing Coal Co.	80,925
Listie Coal Co., Somerset	77,296
Reading Iron Co., Kimmelfton	69,135
Grassy Run Coal Co., Elk Lick	63,270
Meyersdale Fuel Co., Meyersdale	56,703
Georges Creek Parker Coal Co.	45,758
MacGregor Coal Co., Somerset	45,396
Randolph Coal Co., Meyersdale	44,847
Penn. Collieries, Inc., Philadelphia	41,977
Custer Coal Co., Hooversville	38,832
Rich Hill Coal Co., Hastings	27,622
Smaller operators	564,892
Total	5,383,880

TWENTY-FIRST

Vesta Coal Co., California	2,625,428
Pittsburgh Coal Co., Pittsburgh	842,478
Lilley C. & C. Co., Charleroi	420,450
Reliance C. & C. Co., Denbo	353,190
Crucible Fuel Co., Pittsburgh	340,600
Clyde C. & C. Co., Pittsburgh	278,499
Frederickstown C. & C. Co., F'town	264,896
Diamond C. & C. Co., Pittsburgh	213,713
Maple Glen Coal Works, Pittsburgh	192,177
Pickands, Mather & Co., Cleveland, O.	175,593
Clarksville Gas Coal Co., Charleroi	129,743
Champion Gas Coal Co., Pittsburgh	112,500
Pittsburgh Gas Coal Co., Pittsburgh	95,319
H. C. Frick Coke Co., Scottdale	71,868
Bradford Gas Coal Co., Charleroi	63,400
Robert L. James	56,441
Fifth Pool C. & C. Co.	32,882
Millsboro C. & C. Co., Belleverson	30,927
Smaller operators	114,691
Total	6,414,285

TWENTY-SECOND

Pittsburgh Coal Co., Pittsburgh	2,514,920
Keystone C. & C. Co., Greensburg	345,819
Westmoreland Coal Co., Irwin	248,023
Lowber Gas Coal Co., Pittsburgh	206,200
Virginville Coal Co., Pittsburgh	84,643
Central Yough. Coal Co., Pittsburgh	35,188
Lake Shore Gas Coal Co., Buena Vista	26,766
Smaller operators	196,152
Total	3,680,861

TWENTY-THIRD

H. C. Frick Coke Co., Scottdale	3,027,348
Hecla C. & C. Co., Pittsburgh	498,550
Consolidated Coke Co., Grays Landing	401,510
Republic Iron & Steel Co., Uniontown	453,854
Puritan Coke Co., McClellandtown	313,503
Poland Coal Co., Pittsburgh	239,626
Reiley-Callaghan C. & C. Co., Smithfield	198,900
Brothers Val. Coal Co., McDonalton	187,816
Amer. Conns. C. & C. Co., Masontown	166,971

THE COAL TRADE

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Company	Gross Tons
Consolidation Coal Co., Somerset....	157,484
Buckeye Coal Co., Youngstown, O....	156,198
Pittsburgh Steel Co., Pittsburgh	141,761
McKeefrey Coal Co., Martin	101,462
Jas. H. Hoover, Messmore	100,238
West Point Marion Coal Works, Point Marion	87,211
Pine Hill Fuel Co., Meyersdale	62,961
Maple-Sterling Coal Works	56,854
Georges Coal Co., Connellsville	51,356
Wheyl Coke Co., Uniontown	46,007
Penn Pitt C. & C. Co., Point Marion	40,599
Bell C. & C. Co.	40,100
Enterprise Coal Co., Garrett	39,735
Gilmore Coke Co., Uniontown	39,562
Hope Coke Co., Uniontown	37,806
Tri-State Colliery Co., Garrett	37,804
New Geneva Fuel Co., New Geneva	36,550
Berlin Coal Co., Johnstown	36,000
Mabel Coal Works, Johnstown	35,640
Mrs. Frances Rocks, Grove City	35,135
Mutual C. & C. Co., Masontown	34,029
Wm. J. Parshall, Uniontown	32,983
Sterling & Graham Coal Co.	32,385
Quemahoning Coal Co., Somerset ...	31,268
Smaller operators	395,646
Total	7,414,802

TWENTY-FOURTH

Berwind-White CM. Co., Windber..	2,574,467
Reitz Coal Co., Windber	746,856
Imperial Coal Corp., New York, N.Y.	271,901
Arrow CM. Co., Arrow	265,940
Loyal Hanna C. & C. Co., Cairnbrook	221,310
Bird Coal Co., Barnsboro	156,333
Jasahill CM. Co., Johnstown	134,111
Huskin CM. Co., Windber	132,200
Victor CM. Co., Holsopple	129,195
Egolf CM. Co., Windber	109,300
Valley Smokeless Coal Co., Johnstown	101,285
Maple Ridge Coal Co., Holsopple ..	99,210
Morrellville CM. Co., Johnstown ..	91,850
Johnstown Smokel. Coal Co., Johnstown	91,534
Paint Cr. Smokel. Coal Co., Windber	86,642
Grazier CM. Co., Johnstown	86,265
Shade Cr. Coal Co., Johnstown	66,905
Ideal Coal Co., Johnstown	64,951
Lochrie Coal Co., Windber	62,977
East Windber Coal Co., Windber ...	38,436
Smaller operators	236,370
Total	5,748,542

TWENTY-FIFTH

Jeff. & Clear. C. & I. Co., Indiana..	804,207
Penn-Mary Coal Co., Heilwood	717,527
Pittsburgh Gas Coal Co., Indiana	528,328
Russell CM. Co., St. Benedict	388,624
Clearfield Bit. Coal Corp., Clearfield.	273,236
Coal Run Min. Co., Indiana	255,912
Seneca CM. Co., Buffalo, N. Y.	134,472
Empire CM. Co., Philadelphia, Pa.	98,178
Idamar Coal Co., Indiana	62,718
Tide CM. Co., Indiana	56,238
P. A. C. & C. Corp., Barnesboro	55,990
Pennsylvania Collieries, Inc.	47,679
Marion Center CM. Co., Philadelphia	47,451
Williams & Binder, Heilwood	35,052
Ferrier Run Coal Co., Indiana	32,425
Hines Coal Co., Philadelphia	30,180

Company	Gross Tons
Glenside Coal Co., Patton	29,760
Harve-Mack Coal Co., Clymer	28,790
Estep Bros. CM. Co., Ebsenburg	28,426
Milbar Coal Co., Clymer	27,468
Smaller operators	158,524
Total	3,791,185

TWENTY-SIXTH

Pittsburgh Coal Co., Pittsburgh	972,509
National Mining Co., Morgan	904,088
Meadow Lands Coal Co., Pittsburgh..	509,618
McClane Mining Co., Washington ..	422,182
Verner C. & C. Co., Pittsburgh	267,020
Duquesne C. & C. Co., Avella	223,640
Henderson Coal Co., Canonsburg ...	173,175
Waverly C. & C. Co., Pittsburgh ..	140,878
Lincoln Gas Coal Co.	110,932
Pitts. & Southw. Coal Co., Avella ...	88,939
C. P. Mayer Brick Co., Bridgeville..	65,450
Avella Coal Co., Greensburg	62,793
South Fayette Coal Co., Bridgeville..	54,665
Export Coal Co., Pittsburgh	36,348
Smaller operators	91,220
Total	4,247,106

TWENTY-SEVENTH

Pittsburgh Coal Co., Pittsburgh	1,685,660
H. C. Frick Coke Co., Scottdale	727,333
Diamond C. & C. Co., Pittsburgh ..	308,252
W. J. Rainey, Uniontown	302,490
Pittsburgh & Erie Coal Co., Pittsburgh	280,000
Hillman C. & C. Co., Pittsburgh	269,458
Lincoln C. & C. Co., Waltersburg ..	268,281
Snowden Coke Co., Uniontown	199,160
Monessen C. & C. Co., Pittsburgh ..	163,780
Lowber Gas Coal Co., Pittsburgh ..	148,063
Amer. Conns. C. & C. Co., Masontown	139,196
Warner-Yough. Coal Co., Pittsburgh.	111,941
Waltersburg Coke Co., Uniontown..	77,617
Belle Vernon Coke Co., Pittsburgh..	44,341
Henderson Coal Co., Pittsburgh	41,163
L. P. Carter, Monessen	37,747
Atlas Coke Co., Leetonia	29,532
Genuine Conns. Coal Co., Walkersburg	25,888
Chamouni Coal Co., Fayette City ...	25,170
Smaller operators	80,174
Total	4,965,156

TWENTY-EIGHTH

Buf. & Susq. C. & C. Co., Dubois ..	718,612
Cowanshannock C. & C. Co., Yatesboro	628,012
Allegh. Riv. Mining Co., Kittanning..	276,436
Summitt CM. Co., Punxsutawney ...	211,003
Pine Run Coal Co., New Bethlehem..	177,368
Roch. & Pitts. C. & I. Co., Punx.	169,609
Potts Run Coal Co., Clearfield	157,512
Peale, Peacock & Kerr, Inc., St. Benedict	131,808
Mills Coal Co., Timblin	100,776
Maple Run Coal Co., Clearfield	84,535
Lindsey CM. Co., Punxsutawney	68,216
Jefferson Fuel Co., Coal Glen	64,605
Juneau CM. Co., Punxsutawney	59,259
Corbett Coal Co.* Timblin	54,296
Williams Run Coal Co., Punxsutawney	52,412
S. A. Rinn Coal Co., Punxsutawney ..	49,919
Anita CM. Co., Punxsutawney	47,618
Kurtz & Rinn Coal Co., Punxsutawney	43,693

Company	Gross Tons
Mahoning River Coal Co., New Beth.	48,198
Carnwarth Coal Co., Winburne	41,135
Pansy Coal Co., Punxsutawney	29,690
Moshannon Collieries Co., Punx.	26,480
Smaller operators	317,071
Total	8,513,263
* Now operated by the Gilbert Coal Co.	

TWENTY-NINTH

Pittsburgh Coal Co., Pittsburgh	1,125,145
Ford Collieries Co., Butler	1,065,229
Valley Camp Coal Co., Cleveland, O.	881,422
Republic Collieries Co.	509,597
Union Collieries Co., Pittsburgh	409,441
Equitable Coke Co., Pittsburgh	381,791
Inland Collieries Co., Harmarville	316,898
Superior Fuel Co., Russellton	263,513
Montour & Lake Erie Coal Co., Pitts.	121,262
Newfield By-Products Coal Co.	106,021
Diamond C. & C. Co., Pittsburgh	92,996
Harper Coal Co., Turtle Creek	87,911
B. S. Hamill & Co., Pittsburgh	86,861
Export Coal Co., Pittsburgh	72,858
Sun Coal Co., Stoneboro	54,879
Consumers Mining Co.	54,299
J. C. Hall, Turtle Creek	44,629
Smaller operators	209,848
Total	5,884,600

THIRTIETH

Vinton Colliery Co., Vintondale	736,145
Ebensburg Coal Co., Colver	575,488
Roch. & Pitts. C. & I. Co., Indiana	393,469

Company	Gross Tons
Brush Creek CM. Co., Indiana	380,578
Lackawanna C. & C. Co., Wehrum	351,219
Nanty-Glo CM. Co., Nanty-Glo	346,482
Penn. C. & C. Corp., Cresson	245,216
Commercial CM. Co., Expedit	240,052
Springfield CM. Co., St. Benedict	183,028
Graceton Coke Co., Graceton	166,282
Springfield Coal Co., St. Benedict	156,562
Fairfield C. & C. Co., Bolivar	155,767
Monroe CM. Co., Colver	136,987
Dilltown Smokel. Coal Co., Dilltown	134,344
Potter C. & C. Co., Coral	123,102
Lincoln Coal Co., Nanty-Glo	129,198
Homer Coal Co., Homer City	107,093
Big Bend CM. Co., Expedit	107,055
Ridgeview Coal Co., Bolivar	105,721
Imperial Coal Corp., New York, N.Y.	97,840
Climax Coal Co., Lockport	86,942
Maier & Graff Coal Co., Blairsville	80,080
Conemaugh Smokel. C. Co., Johnstown	72,918
Inland Coal Co., Nettleton	61,654
Warren Collieries Co., Nanty-Glo	58,675
Jackson CM. Co., Expedit	57,364
Graff Coal Co., Blairsville	55,267
Amerford Coal Co., Blairsville	54,636
Kiskiminitas Coal Co., Blairsville	47,200
Cladwell Smokel. Coal Co., Ebensburg	43,387
Bells Mill Coal Co., Blairsville	41,638
Nineveh C. & C. Co., Johnstown	35,298
Garfield Smokel. Coal Co., Bolivar	31,358
Margaret CM. Co., Blairsville	29,415
Smaller operators	129,553
Total	5,767,143

STRIPPING OPERATIONS IN PENNSYLVANIA

Stripping operations account for but a very small percentage of the coal mined in the state of Pennsylvania. From the standpoint of tonnage, the anthracite regions lead with 2,360,183 tons in 1918, or 2.4 per cent. of the anthracite tonnage for the year. The principal stripping developments are in the 15th, 16th, 17th and 19th districts. Bituminous stripping recovery for the same year totaled only 1,031,578 tons or .6 per cent. This, however, represents a marked gain over the 1917 figure of 349,944 tons.

COAL PRODUCTION OF WEST VIRGINIA

West Virginia's coal production is outranked only by that of Pennsylvania. It is now several years since it definitely passed Illinois in the race for second place, and its possession has since been secure although in 1918 Illinois ran it a close race. From the standpoint of distribution, the coal product of West Virginia is probably better known than any other fuel except anthracite. Its semibituminous coals have met the smokeless output of other states in their own territory and have, in addition, been shipped over a much wider area than competing coals. With the access to the sea at the Virginia loading ports, West Virginia has been the premier coal exporting state to destinations other than Canada, while large tonnages have been shipped coastwise to New England and, to a lesser degree, to some of the southern states.

In the development of its coal resources, West Virginia has had the advantage of three trunk lines that have catered to this traffic. In addition, labor conditions have been less subject to the control of the U. M. W. organization. This latter situation, however, has been gradually undergoing a

change within the past few years, until today the Norfolk & Western smokeless fields are the last stronghold of the open shop in mine labor. In the New River field, unionism has made headway; the same is also true of the splint districts, and two years ago, the Fairmont field recognized the union. The open shop idea is still recognized in parts of eastern Kentucky, but there, too, the grip of the U. M. W. is tightening.

West Virginia first outranked Illinois in 1906. The comparative figures for the two states since that time are shown in the table following:

West Virginia		Illinois		West Virginia		Illinois	
Year	Net tons	Year	Net tons	Year	Net tons	Year	Net tons
1906.....	43,290,350	1906.....	41,480,104	1913.....	71,254,136	1913.....	61,618,744
1907.....	48,091,583	1907.....	51,317,146	1914.....	71,707,626	1914.....	57,589,197
1908.....	41,897,843	1908.....	47,659,690	1915.....	77,184,069	1915.....	58,829,576
1909.....	51,849,220	1909.....	50,904,990	1916.....	86,460,127	1916.....	66,195,336
1910.....	61,671,019	1910.....	45,900,246	1917.....	86,441,667	1917.....	86,199,387
1911.....	59,831,580	1911.....	53,679,118	1918.....	89,935,839	1918.....	89,291,105
1912.....	66,786,637	1912.....	59,885,226	1919.....	*75,500,000	1919.....	*64,600,000

* Estimated.

The advance of West Virginia in importance since it was carved out of Virginia in 1863 is shown in the following statement covering production at five-year intervals since that time:

Year	Tons	Year	Tons	Year	Tons
1863.....	444,648	1883.....	2,335,833	1903.....	29,337,241
1868.....	609,227	1888.....	5,498,800	1908.....	41,897,843
1873.....	1,000,000	1893.....	10,708,578	1913.....	71,254,136
1878.....	1,120,000	1898.....	16,700,999	1918.....	89,935,839

The coal fields of West Virginia belong to the Appalachian region. They are divided into three large and distinct areas and have numerous subdivisions. The main body of the northern field is the Fairmont or B. & O. region. Subsidiary to these are the Wheeling and the Elkins (interior) districts. Further south is the C. & O. territory, comprising, to the eastward, the New River field, served also by the Virginian R.R. to some extent, and to the westward, the Kanawha region, served also by the Kanawha River and the K. & M. branch of the Toledo & Ohio Central. Still further south, immediately adjacent to Virginia into which it extends, is found a large part of the celebrated Pocahontas region, served by the Norfolk & Western and, in part, by the Virginian R.R.

Not only is the state notable for the amount of coal within its areas but for the adaptability thereof for various purposes. The northern part produces an excellent gas coal which is good also for general steaming requirements while the southern part of the state produces smokeless coal which is high in favor for domestic purposes as well as being a splendid steam coal.

For the fiscal year ending June 30, 1919, the production, according to the records of the state mine inspector, was 75,875,493 gross tons, or 84,980,552 net tons. By districts, the gross tonnage in recent fiscal years has been as follows:

Year	Potomac	Monongahela	Wheeling	Interior	New R.-Kan.	Nor. & W.
1912.....	1,059,580	12,828,379	1,719,180	353,486	20,203,480	22,217,669
1913.....	1,982,088	14,168,063	1,661,308	413,739	19,028,918	24,216,236
1914.....	2,077,031	15,611,399	1,976,606	405,059	20,567,977	24,845,016
1915.....	2,175,223	14,379,834	2,230,832	456,605	19,857,915	24,718,268
1916.....	2,131,109	15,864,468	2,257,591	496,655	24,278,453	34,115,492
1917.....	2,179,475	15,091,150	2,490,434	485,294	23,684,172	34,876,130

THE COAL TRADE

PRODUCTION BY COUNTIES

Production by counties for the years ending June 30, 1915, to June 30, 1919, is shown below. These figures are given because they carry the tonnages six months further than the detailed figures of the United States Geological Survey now available. Figures are in gross tons.

County	1915	1916	1917	1918	1919
Barbour	962,228	1,096,358	1,306,983	1,362,068	1,308,167
Boone	575,835	631,664	720,868	1,061,602	1,248,408
Braxton	294,206	316,445	286,594	255,774	309,108
Brooke	727,326	594,909	727,069	979,151	1,326,429
Clay	531,645	479,320	483,463	445,862	449,434
Fayette	7,881,872	10,502,778	9,555,518	8,828,080	9,165,245
Gilmer	137,971	121,036	119,151	71,159	88,675
Grant	165,121	178,420	267,269	263,653	122,476
Greenbrier	24,128	35,692	45,207	37,311	33,695
Harrison	4,533,032	4,705,708	4,675,411	4,875,435	3,712,132
Kanawha	5,142,586	5,766,523	5,577,677	5,758,926	5,176,533
Lewis	300	23,482	20,640	33,830	32,349
Lincoln	41,966	109,396	200,179	238,472	206,255
Logan	6,307,286	8,203,312	8,859,122	9,330,078	9,342,441
Marion	5,988,879	6,189,891	5,125,390	4,533,466	4,400,008
Marshall	963,173	1,018,842	1,119,827	941,974	939,281
Mason	125,135	109,655	157,241	176,097	128,352
McDowell	13,007,674	19,006,329	18,671,942	17,806,400	16,209,411
Mercer	2,717,510	3,519,962	3,225,429	2,949,936	2,582,148
Mineral	556,350	639,336	697,242	791,281	462,253
Mingo	2,538,174	2,938,543	3,207,162	3,081,019	2,547,937
Monongalia	319,974	519,201	751,403	1,547,623	6,546,227
Nicholas	122,164	182,854	176,455	136,048	148,099
Ohio	540,333	643,840	643,538	801,076	637,309
Preston	980,322	1,246,189	1,106,378	1,400,907	1,325,251
Putnam	479,045	531,589	508,489	472,538	285,075
Raleigh	4,957,567	5,001,849	6,304,282	6,744,860	6,316,668
Randolph	550,108	784,556	708,638	874,760	847,257
Taylor	946,814	1,182,552	1,270,182	1,177,536	1,021,539
Tucker	1,453,752	1,313,348	1,214,964	1,297,211	1,117,058
Upshur	98,504	140,013	146,762	283,438	423,816
Wayne	51,458	63,451	60,441	89,970	25,174
Webster .....	.....	.....	3,702	6,119	6,599
Wetzel .....	.....	.....	10,000	30,000	43,415
Wyoming	96,166	432,177	852,034	1,085,915	897,103
Total gross (including small mines)	64,118,677	79,443,768	79,806,652	80,674,913	75,875,493

This shows that there are now 16 counties producing over 1,000,000 tons a year.

United States Geological Survey figures covering production by counties are shown in the next table. These figures are in net tons and are for calendar year periods, while, as before stated, the figures preceding were in gross tons and for the fiscal year ending June 30.

County	1914	1915	1916	1917	1918
Barbour	1,331,948	1,320,069	1,367,109	1,405,888	1,641,110
Boone	592,558	661,898	759,736	910,396	1,349,585
Braxton	306,608	.....	329,528	274,071	350,215
Brooke	554,870	615,446	720,252	875,653	1,378,492

County	1914	1915	1916	1917	1918
Clay	563,561	584,205	480,712	529,527	472,759
Fayette	9,038,738	10,182,958	10,998,026	10,059,802	9,578,906
Gilmer	114,876	148,125	125,481	108,576	69,202
Grant	179,642	179,642	203,059	†	316,808
Hancock	4,928	.....	4,763	11,914	12,672
Harrison	5,291,683	5,112,161	5,186,974	5,384,251	5,622,917
Kanawha	5,989,055	5,305,224	6,027,142	6,515,007	6,231,431
Lincoln	54,821	44,956	183,266	227,177	279,785
Logan	6,618,951	7,918,963	9,412,402	9,408,917	11,268,271
McDowell	14,588,564	17,411,439	20,485,125	20,048,712	18,662,621
Marion	6,731,542	6,689,713	6,097,069	5,256,105	5,208,969
Marshall	1,153,126	990,960	1,209,604	1,109,451	1,102,762
Mason	121,911	122,779	119,637	199,176	241,277
Mercer	2,961,141	3,489,049	3,693,171	3,326,727	3,174,416
Mineral	633,406	660,250	692,250	879,921	857,913
Mingo	2,839,014	2,871,739	3,474,137	3,380,479	3,419,583
Monongalia	414,821	400,222	590,339	1,127,277	2,354,178
Nicholas	106,432	.....	.....	200,066	183,081
Ohio	570,347	576,267	637,953	633,685	763,274
Preston	1,240,650	1,239,614	1,279,082	1,337,972	1,788,211
Putnam	554,859	542,669	604,348	519,673	352,948
Raleigh	5,454,059	5,883,485	6,989,772	7,239,259	7,483,829
Randolph	520,360	451,696	732,297	858,029	1,016,572
Taylor	1,308,704	1,068,594	1,466,124	1,393,313	1,348,121
Tucker	1,504,215	1,651,567	1,290,735	1,459,137	1,401,670
Upshur	119,757	98,147	159,187	228,164	466,264
Webster .....	.....	.....	21,199	24,969	30,799
Wyoming	75,058	243,735	699,681	1,104,381	1,236,328
Others, etc.	177,421	86,246	419,967	403,992	272,870
Total	71,707,626	77,184,069	86,460,127	86,441,667	89,935,839

† Included under other counties.

Tonnages handled by the principal carriers serving the West Virginia coal fields during the above period are covered by tables on the next page.

	1913	1914	1915	1916	1917*
Baltimore & Ohio	11,982,307	12,752,231	13,487,080	14,007,398	†14,500,000
Chesapeake & Ohio	13,718,299	15,952,098	21,125,742	19,624,669	21,648,389
Norfolk & Western	22,804,742	25,149,324	22,614,513	32,562,019	†24,792,333
Kanawha & Michigan ...	4,306,115	2,363,249	3,892,328	3,194,855	2,480,685
Western Maryland	2,739,000	2,812,529	2,839,959	3,017,942	4,054,742
Virginian	4,042,456	4,414,739	3,427,536	1,412,999	6,736,980
Coal & Coke	883,594	1,147,716	1,312,863	.....	.....
Totals	60,476,513	64,591,822	68,700,021	76,374,634	74,213,129

* Calendar year. † Estimated.

These figures, the latest available, are furnished by the West Virginia Department of Mines. They differ somewhat from company figures of total coal traffic as they embrace only the tonnage produced on the lines of the several roads in the State of West Virginia.

Kanawha River coal tonnage in calendar year 1905 was 1,317,960 net tons, and for 1906, 1,113,410 net tons; 1907, 1,648,761 net tons; 1908, 955,384 net tons; 1909, 1,246,008 net tons; 1910, 1,229,660 net tons; 1911, 1,317,660 net tons; 1912, 1,276,060 net tons; 1913, 1,342,800 net tons; 1914, 1,052,560 net tons; 1915, 1,205,530 net tons; 1916, 1,366,000 net tons; 1917, 1,428,900 net tons. 1918, 1,091,640 net tons; 1919, 741,900 net tons.

Company	Gross Tons
Hitchman C. & C. Co.	337,313
Mineral State Coal Co.	130,346
Richland Coal Co.	54,830
Wheeling S. & I. Co.	238,591

OHIO COUNTY

Costanzo, Frank	39,968
Elm Grove Mining Co.	209,671
LaBelle Iron Works	43,660
Pittsburgh-Wheeling Coal Co.	37,591
Richland Coal Co.	229,928
Whitaker-Glessner Co.	76,340
Total (includes 55,586 tons from 6 smaller operations)	2,908,019

3. FAIRMONT DISTRICT

(Counties of Harrison, Marion, Monongalia and Wetzel)

HARRISON COUNTY

Alpha Portland Cement Co.	31,242
Antler Coal Co.	29,400
Balkan Coal Co.	36,845
Bethlehem Coal Co.	49,711
Calif Coal Co.	37,362
Cambria Coal Co.	152,624
Central Fairmont Coal Co.	69,615
Clarksburg Industrial Coal Co.	25,900
Conn. Hygrade Coal Co.	32,778
Consolidation Coal Co.	1,049,568
Corona Coal Co.	66,390
Dawson Coal Co.	268,963
Eastern Utilities Coal Co.	71,532
Elk Horn Coal Corp.	123,416
Fairmont & Baltimore C. & C. Co.	47,276
Fairmont Big Vein Coal Co.	59,139
Fort Clark Coal Co.	43,248
Fort Pitt Coal Co.	45,139
Francois Coal Co.	124,580
Franklin Gas Coal Co.	38,726
G. M. Shoemaker & Co.	30,546
Grasselli Chemical Co.	49,232
Harry B. Coal & Coke Co.	155,582
Hutchinson Coal Co.	632,404
Lambert Run Coal Co.	50,045
Long Coal Mining Co.	162,335
Long Fuel Co.	32,410
Madeira-Hill Clark Coal Co.	204,445
Marion Gas Coal Co.	65,107
Marshall Coal Co.	120,869
Monongah Fuel Co.	32,234
Montfair Gas Coal Co.	77,678
Mt. Clare Colliery Co.	35,522
Penneco Coal Co.	31,939
Pine Bluff Coal Co.	25,094
Prunty Real Estate Coal Co.	44,628
Ryan Coal Co.	47,552
Stone & Scott Coal Co.	25,000
Thermal Coal Co.	39,813
Virginia-Maryland Coal Corp	97,881
Wyatt-Bingamon Coal Co.	27,753

MARION COUNTY

Bethlehem Coal Co.	61,863
Consumers Fuel Co.	151,065
Consolidation Coal Co.	1,523,237
East Side Utility Co.	34,961
Fairmont & Cleveland Coal Co.	242,152
Four States Coal Co.	246,774

Company	Gross Tons
Harry B. Coal Co.	31,141
Jamison Coal & Coke Co.	623,233
Monongahela Valley Traction Co. ..	169,117
New England Fuel & Transp. Co. ...	717,590
Norway Coal Co.	54,696
Rivesville Coal Co.	29,000
Robinson Coal Co.	40,886
Virginia & Pittsburgh C. & C. Co. ...	351,242

MONONGALIA COUNTY

Areford CM. Co.	36,781
Chaplin Collieries Co.	58,201
Cleveland-Morgantown Coal Co.	120,279
Connellsville Basin Coke Co.	51,044
Connellsville Big Vein Coal Co.	35,000
Consumers Fuel Co.	319,260
Delmar Coal Co.	30,359
Diamond Coal Co.	24,200
Elkins Coal & Coke Co.	121,267
Fairmont-Lowesville Coal Co.	26,493
Gilbert Fuel Co.	31,543
Greenmont Fuel Co.	33,514
Har-Mar Coal Co.	50,330
Hess C. & C. Co.	58,109
Jamison C. & C. Co.	57,074
Lockview Coal Co.	38,933
Monongalia Coal Co.	63,766
North American Coal Co.	147,524
Osage Coal Co.	43,733
Pollock Coal Co.	25,000
Randall Coal Co.	49,158
Rosedale Coal Co.	100,491
Scott Run Coal Co.	36,215
Serepi Coal Co.	45,298
Soper Reynolds Coal Co.	30,000
South Pittsburgh Coal Co.	28,089
Southern Connellsville Coke Co.	38,594
Trope Coal Co.	72,000
W. A. Stone Fuel Co.	57,752

WETZEL COUNTY

Hope Natural Gas Co.	43,415
Total (includes 732,993 tons from 57 smaller operations)	11,818,774

3. PRESTON-BARBOUR DISTRICT

(Counties of Barbour, Braxton, Gilmer, Greenbrier, Lewis, Northern Nicholas, Preston, Taylor, Upshur and Webster)

Berryburg Coal Co.	25,982
Big Run Coal Co.	40,492
Century Coal Co.	295,334
Consolidation Coal Co.	78,861
Davis C. & C. Co.	137,571
Ford Run Franklin C. & C. Corp. ..	120,392
Grafton Mining Co.	42,510
Initial Fuel Co.	52,377
Meadowvale Coal Co.	36,760
Morrall Coal Co.	25,113
O'Toole, Edward, Trustee	32,416
Simpson Creek Coal Co.	154,711
Waddell Coal Co.	56,202
West Virginia C. & C. Co.	69,058

BRAXTON COUNTY

Copen Creek Coal Co.	49,331
Pittsburgh-Summit Coal Co.	25,741
West Virginia Coal & Coke Co.	153,557

Company	Gross Tons	Company	Gross Tons
GILMER COUNTY		TUCKER COUNTY	
Gilmer Fuel Co.	28,717	Blackwater Coal Co.	86,735
NICHOLAS COUNTY		Cumberland Coal Co.	119,857
Saxman Coal & Coke Co.	60,538	Davis C. & C. Co.	960,466
PRESTON COUNTY		Total (includes 153,845 tons from 14 smaller operations)	2,549,044
Albright Smokeless Coal Co.	80,323	5. MASON DISTRICT	
Austen C. & C. Co.	76,374	<i>(County of Mason)</i>	
Bonafield Coal Co.	25,588	MASON COUNTY	
Borgman Coal Co.	86,039	Hutchinson Coal Co.	57,635
Car-Diff Smokeless Coal Co.	38,221	Jackson Coal & Mining Co.	27,455
Deaker Hill Coal Co.	33,751	Total (includes 43,362 tons from 6 smaller operations)	198,352
Elkins C. & C. Co.	223,429	6. PUTNAM DISTRICT	
Independence Coal Co.	27,175	<i>(County of Putnam)</i>	
Irona Coal Co.	65,898	PUTNAM COUNTY	
Kendall Lumber Co.	48,397	Black Betsey Consol. Coal Co.	56,575
Merchants Coal Corp.	140,831	Otto Marmet Coal & Mining Co.	115,284
Miller, Joseph	56,186	Plymouth Coal & Mining Co.	113,216
Morgan Coal Co.	33,759	Total	285,075
Mutual Coal Co.	27,756	7. KANAWHA DISTRICT	
National Fuel Co.	33,325	<i>(Counties of Boone, north of Greenview; Clay, Northern Fayette, Kanawha, western Lincoln, southern Nicholas northern Raleigh)</i>	
Preston Coal Co.	34,852	BOONE COUNTY	
Preston County Coke Co.	112,422	Anchor Coal Co.	122,738
Preston County Power Co.	26,250	Dartmont Coal Co.	27,233
Smith Coal Co.	28,209	Halcon Coal Co.	29,103
Wills, John	28,114	Horse Creek Block Coal Co.	57,187
TAYLOR COUNTY		Madison Coal Co.	26,682
Darby Coal Co.	27,242	Maxine Coal Co.	36,127
Delmar Coal Co.	61,154	Royal Block Coal Co.	28,492
Grafton C. & C. Co.	54,771	Seng Creek Coal Co.	99,715
Harrison Coal Co.	37,210	Sharlow Gas Coal Co.	81,986
Maryland Coal Co. of W. Va.	465,975	Spruce River Coal Co.	118,373
Pittsvein Coal Co.	107,247	Sterling Colliery Co.	85,903
Rosemont Coal Co.	90,109	Superior Eagle Coal Co.	26,485
Simpson Creek Coal Co.	34,467	Valco Coal Co.	30,892
Sterling Coal Co.	25,954	Webb CM. Co.	117,304
UPSHUR COUNTY		CLAY COUNTY	
Buckhannon River Coal Co.	182,401	Elk River Coal & Lumber Co.	298,223
Pecks Run Coal Co.	39,160	Elliott Splint Coal Co.	50,723
Red Rock Fuel Co.	26,735	FAYETTE COUNTY	
W. H. Green Coal Co.	69,612	American Rolling Mills Co.	143,290
Total (includes 775,688 tons from 73 smaller operations)	4,609,937	Beury Bros. C. & C. Co.	43,145
4. ELK GARDEN DISTRICT		Black Betsey Cons. Coal Co.	140,261
<i>(Counties of Grant, Mineral, Randolph and Tucker)</i>		Boomer Coal & Coke Co.	398,720
GRANT COUNTY		Cannelton C. & C. Co.	370,791
Davis C. & C. Co.	114,852	Christian Colliery Co.	70,474
MINERAL COUNTY		Elkhorn Piney Coal Mining Co.	236,973
Abrams Creek C. & C. Co.	55,911	Greenbrier Colliery Co.	38,617
Davis C. & C. Co.	100,905	Kanawha & Hocking C. & C. Co.	446,925
Deep Run Big Vein Coal Co.	49,655	Loup Creek Colliery Co.	217,687
Gleason C. & C. Co.	56,699	Milburn By-Products Coal Co.	110,000
Jaffy Coal Mining Co.	34,083	Solvay Collieries Co.	633,414
Masteller Coal Co.	59,737	St. Clair Coal Mining Co.	79,932
RANDOLPH COUNTY		W. R. Johnson Coal Co.	67,857
Brady, A. Spates	38,761		
Davis C. & C. Co.	66,687		
J. B. Jenkins C. & C. Co.	40,713		
West Virginia C. & C. Co.	628,836		
W. Va. Pulp & Paper Co.	31,862		

THE COAL TRADE

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Company	Gross Tons	Company	Gross Tons
KANAWHA COUNTY			
Belmont Coal Co.	89,428	Lick Fork Coal Co.	44,000
Blue Creek Coal & Land Co.	119,575	Long Branch Coal Co.	149,878
Cabin Creek Cons. Coal Co.	820,225	Lookout Coal & Coke Co.	26,397
Campbells Creek Coal Co.	283,424	Low Moor Iron Co. of Va.	169,052
Cannelton Coal & Coke Co.	148,455	Lynchburg Colliery Co.	29,214
Carbon Fuel Co.	586,189	McKell Coal & Coke Co.	210,227
Chesapeake Mining Co.	45,776	Macdonald Colliery Co.	28,550
Coalburg Colliery Co.	120,000	Maryland New River Coal Co.	73,196
Coalburg-Kanawha Mining Co.	48,946	Midvale Colliery Co.	47,941
Coal Fork Coal Co.	80,837	New River Collieries Co.	243,028
Crown Hill Coal Co.	93,308	New River & Poca, Consol. Coal Co.	646,884
Don Coal Co.	97,576	Nichol Colliery Co.	77,814
Dry Branch Coal Co.	85,766	Nuttallburg Smokeless Fuel Co.	48,285
Empire Fuel Co.	59,808	Prudence Coal Co.	104,623
Eureka Coal Co.	117,511	Quinnimont Coal Co.	81,554
Imperial Colliery Co.	164,301	Rock Lick Coal Co.	99,995
Kanawha & Hocking C. & C. Co.	239,229	Scotia Coal & Coke Co.	100,527
Kelley's Creek Colliery Co.	435,845	Sewell Smokeless Coal Co.	51,215
Lewis Coal & Coke Co.	49,599	Sewell Valley Coal Co.	26,313
Marmet Coal Co.	55,729	Signal Knob Coal Co.	23,522
Marmet-Oliver Coal Co.	27,925	South Side Co.	32,814
New Export Coal Co.	50,187	Star Coal & Coke Co.	110,115
Paint Creek Coal Mining Co.	505,743	Stuart Colliery Co.	205,815
Quincy Coal Co.	43,654	Sugar Creek Coal & Coke Co.	60,873
Southw. Splint Fuel Co.	42,860	Turkey Knob Coal Co.	121,662
Standard Kanawha CM. Co.	43,000	White Oak Fuel Co.	474,114
Wake Forest Mining Co.	56,408	Willis Branch Coal Co.	75,222
Wet Branch Mining Co.	115,323		
Winifrede Coal Co.	123,037		
Wyatt Coal Co.	244,114		

NICHOLAS COUNTY	
Coal Bell Coal Co.	30,391
Tioga Coal Co.	32,000

RALEIGH COUNTY	
Clear Fork Coal Co.	90,906
Colcord Coal Co.	63,740
Marsh Fork Coal Co.	81,880
U. S. R. R. C. & O.	43,879
Total (includes 861,540 tons from 83 smaller operations)	10,234,964

8. NEW RIVER DISTRICT
(Counties of eastern Fayette, southern Green-
brier, southern Raleigh, Summers and
Wyoming)

FAYETTE COUNTY	
Babcock Coal & Coke Co.	67,591
Ballinger Coal Co.	25,978
Beechwood Coal & Coke Co.	55,978
Blume Coal & Coke Co.	64,654
Branch Coal & Coke Co.	83,435
Brown Coal Co.	55,340
Coal Run Coal Co.	47,243
Collins Colliery Co.	86,688
DeWitt Fuel Co.	33,818
Dun Loup Coal & Coke Co.	145,726
Ephraim Creek Coal & Coke Co.	85,758
Fire Creek Coal & Coke Co.	28,043
Gauley Mountain Coal Co.	233,984
Greenwood Coal Co.	74,694
Harvey Coal & Coke Co.	175,502
Hemlock Hollow Coal & Coke Co.	35,265
Laurel Creek Coal Co.	33,358
Lee Coal Co.	27,735

RALEIGH COUNTY	
Amigo Coal Co.	81,524
Bailey Wood Coal Co.	112,246
Beckley Coal & Coke Co.	119,513
Beckley Smokeless Coal Co.	47,068
Blue Jay Lumber Co.	82,875
Bowyer Smokeless Coal Co.	29,233
Cook & Carter Coal Co.	81,796
Cranberry Fuel Co.	394,038
Douglas Coal Co.	58,581
East Gulf Coal Co.	70,359
E. E. White Coal Co.	616,406
Elkhorn Piney Coal Mining Co.	254,461
Fire Creek Smokeless Fuel Co.	47,996
Gulf Coal Co.	30,343
Gulf Smokeless Coal Co.	264,770
Lanark Coal Co.	45,916
Laurel Smokeless Coal Co.	32,050
Leckie Fire Creek Coal Co.	92,004
Lillybrook Coal Co.	145,600
Lynwin Coal Co.	51,784
McKell Coal & Coke Co.	166,094
Mabscott Coal & Coke Co.	139,340
MacAlpin Coal Co.	201,085
Mead Tolliver Coal Co.	122,756
New River Collieries Co.	429,298
Pemberton Coal & Coke Co.	156,044
Pemberton Fuel Co.	65,000
Pickshin Coal Co.	56,950
Price Hill Colliery Co.	48,202
Prince-Wick Coal Co.	78,116
Raleigh Coal & Coke Co.	391,508
Slab Fork Coal Co.	252,849
Sullivan Coal & Coke Co.	41,318
Very Top Seam Coal Co.	25,914
Western Pocahontas Fuel Co.	587,049
Winding Gulf Colliery Co.	319,774
Wood Sullivan Coal Co.	90,400
Wright Coal & Coke Co.	48,152

WYOMING COUNTY	
Alpha Pocahontas Coal Co.	114,156

Company	Gross Tons
Barkers Creek Coal Co.	44,050
Devils Fork Coal Co.	37,558
Flat Top Pocahontas Coal Co.	25,033
Harty Coal Co.	78,850
Iroquois Coal Mining Co.	54,048
Mead Pocahontas Coal Co.	45,500
Miller Pocahontas Coal Co.	50,071
Pocahontas Fuel Co.	125,160
Sabine Collieries Corp.	84,832
Smith Pocahontas Coal Co.	40,800
Trace Fork Coal Co.	46,351
United Pocahontas Coal Co.	81,554
Wyoming Coal Co.	111,094
Total (includes 435,870 tons from 32 smaller operations)	11,850,518

9. LOGAN DISTRICT

(Counties of southern Boone, eastern Lincoln
and Logan)

BOONE COUNTY

Monte Coal Co.	301,644
Mordue Collieries Co.	83,909

LINCOLN COUNTY

Ivy Branch Coal Co.	64,323
Ivy White Ash Coal Co.	55,000
Right Fork Coal Co.	28,328

LOGAN COUNTY

Aldredge Coal Co.	25,000
Amherst Coal Co.	233,581
Aracoma Coal Co.	179,684
Argyle Coal Co.	50,428
Bengal Coal Co.	78,000
Boone County Coal Corp.	388,115
Buffalo Eagle Colliery Co.	225,809
Carbon Hill Collieries Co.	125,300
Cleveland-Cliffs Iron Co.	304,951
Commonwealth Power, Ry. & Lt. Co.	191,925
Cub Fork Coal Co.	50,625
Deegans Eagle Coal Co.	107,885
D. C. Thomas Coal Co.	79,560
Draper Coal & Coke Co.	36,806
Eagle Island Coal Co.	50,612
E. R. Johnson Coal Mining Co.	26,082
Fort Branch Coal Corp.	29,485
Gay Coal & Coke Co.	134,080
Georges Creek Coal Co., Inc.	49,620
Guyandotte Coal Co.	25,800
Guyan Mining Co.	45,475
Guyan Valley Coal Co.	33,700
Holdred Collieries of West Va.	44,695
H. T. Wilson Coal Co.	42,449
Huff Creek Coal Co.	39,589
Huff Mining Co.	28,000
Illinois Commercial & Mining Co.	127,641
Island Creek Coal Co.	1,784,229
Litz-Smith Coal Co.	51,082
Litz-Smith Island Creek Coal Co.	114,685
Logan Mining Co.	461,107
Long Flame Coal Co.	81,026
Lorain Coal & Dock Co.	883,750
Low Ash Coal Co.	41,329
Lundale Coal Co.	251,411
MacGregor Coal Co.	114,180
Maher-Pursglove Mining Co.	86,589
Main Island Creek Coal Co.	837,751
Mallory Coal Co.	150,889

Company	Gross Tons
Monitor Coal & Coke Co.	254,709
Number Five Block Coal Co.	66,973
Omar Coal Co.	154,858
Opperman Coal Co.	66,711
Paragon Colliery Co.	156,899
Prockter Coal Co.	160,125
Prockter-Eagle Coal Co.	28,850
Red Campbell Coal Co.	28,296
Rich Creek Coal Co.	107,288
Rum Creek Colls. & By-Product Co.	134,140
Sekay Coal Co.	50,659
Shamrock Coal Co.	70,102
Sovereign Coal Co.	49,085
Standard Island Creek Coal Co.	293,851
Stone Branch Coal Co.	60,000
Sunbeam Coal Co.	26,896
Thermo-Pocahontas Coal Co.	68,459
Thurmond Coal Co.	37,638
Whitaker-Glessner Co.	112,582
Wood Coal Co.	78,000
Yuma Coal & Coke Co.	98,192
Total (includes 145,433 tons from 11 smaller operations)	9,726,145

10. POCAHONTAS DISTRICT

(Counties of McDowell and Mercer)

MCDOWELL COUNTY

Algoma Coal & Coke Co.	125,729
Arlington Coal & Coke Co.	83,350
Ashland Coal & Coke Co.	236,125
Black Wolf Coal & Coke Co.	26,600
Bottom Creek Coal & Coke Co.	157,365
Bradshaw Coal Co., Inc.	85,000
Buchanan Coal Co.	46,240
Carter Coal Co.	335,223
Central Pocahontas Coal Co.	349,720
Cirrus Coal & Coke Co.	29,868
Crozer Coal & Coke Co.	411,048
Davy-Pocahontas Coal Co.	50,938
Eclipse Pocahontas Coal Co.	25,514
Elkhorn Coal & Coke Co.	174,345
Elkridge Coal & Coke Co.	84,217
Empire Coal & Coke Co.	190,679
Eureka Coal & Coke Co.	152,490
Excelsior Pocahontas Coal Co.	502,702
Fall River Pocahontas Collieries Co.	83,311
Flanagan Coal Co.	56,445
Fortune Hunter Coal Co.	21,702
Garland Pocahontas Coal Co.	25,000
Gilliam Coal & Coke Co.	130,028
Greenbrier Coal & Coke Co.	99,876
Hampton Roads Collieries Co.	36,115
Houston Coal & Coke Co.	258,156
Houston Collieries Co.	306,704
J. B. B. Coal Co.	281,275
Johns Branch Coal Co.	47,322
Keystone Coal & Coke Co.	244,183
Kimball-Pocahontas Coal Co.	33,613
King Coal Co.	193,350
Lake Superior Coal Co.	200,332
Lathrop Coal Co.	83,433
Litz-Smith Pocahontas Coal Co.	69,295
Lynchburg Coal & Coke Co.	220,857
McDowell Coal & Coke Co.	168,521
Marine Smokeless Coal Co.	68,394
Mohawk Coal & Coke Co.	88,488
New Pocahontas Coal Co.	115,211
New River Poca. Consol. Coal Co.	747,255

Company	Gross Tons	Company	Gross Tons
Page Coal & Coke Co.	294,042	Smokeless Coal & Coke Co.	30,510
Panther Coal Co.	78,554	Solvay Collieries Co.	114,131
Peerless Coal & Coke Co.	814,643	Thomas Coal Co.	160,190
Pocahontas Domestic Coal Co.	54,701	Turkey Gap Coal & Coke Co.	272,792
Pocahontas Fuel Co., Inc.	1,876,160	Weyanoke Coal & Coke Co.	172,610
Powhatan Coal & Coke Co.	200,294	Total (includes 189,890 tons from 17 smaller operations)	18,791,559
Premier Pocahontas Colls. Co.	213,611		
Pulaski Iron Co.	285,103		
Roanoke Coal & Coke Co.	104,185		
Sayers Pocahontas Coal Co.	31,818		
Shawnee Coal & Coke Co.	72,786		
Solvay Collieries Co.	868,934		
Superior Pocahontas Coal Co.	166,524		
Tidewater Coal & Coke Co.	156,861		
Turkey Gap Coal & Coke Co.	51,670		
United Pocahontas Coal Co.	282,674		
United States Coal & Coke Co.	4,229,407		
Upland Coal & Coke Co.	218,072		
War Creek Coal Co.	29,648		
Warrior Coal Co.	138,709		
West Virginia Pocahontas Coal Co.	37,664		
Williams Pocahontas Coal Co.	94,702		
Yukon Pocahontas Coal Co.	142,257		
MERCER COUNTY		11. MINGO DISTRICT	
Algonquin Coal Co.	74,778	<i>(Counties of Mingo and Wayne)</i>	
American Coal Co.	460,464	MINGO COUNTY	
Booth Bowen Coal & Coke Co.	88,122	Buffalo Thacker Coal Co.	63,964
Buckeye Coal & Coke Co.	120,292	Chattaroy Coal Co., Inc.	48,066
Coaldale Coal & Coke Co.	42,425	Crystal Block Coal & Coke Co.	163,898
Crystal Coal & Coke Co.	135,249	Crystal Block Mining Co.	91,232
Ennis Coal Co.	135,857	Glen Alum Coal Co.	182,721
Louisville Coal & Coke Co.	118,127	Grey Eagle Coal Co.	45,427
Mill Creek Coal & Coke Co.	166,007	Himler Coal Co.	34,568
Pawama Coal & Coke Co.	85,739	Howard Collieries Co.	263,459
Pocahontas Fuel Co., Inc.	324,170	Lynn Coal & Coke Co.	58,456
S. J. Patterson Pocahontas Co.	90,635	Naugatuck Coal Co.	61,866
		Red Jacket Cons. Coal & Coke Co.	253,357
		Red Jacket Jr. Coal Co.	87,728
		Stone Mountain Coal Corp.	58,980
		Superior Thacker Coal Co.	40,270
		Sycamore Coal Co.	140,072
		Thacker Coal & Coke Co.	319,184
		Traders Coal Co.	52,757
		War Eagle Coal Co.	132,046
		White Star Mining Co.	91,027
		Wilhelmina Coal Co.	29,775
		Williamson Coal & Coke Co.	104,106
		Winifrede Thacker Coal Co.	43,231
		Total (includes 115,916 tons from 10 smaller operations)	2,433,111

LARGE PRODUCERS OF WEST VIRGINIA COAL

Among the eleven geographical districts into which the State of West Virginia has been divided insofar as the production of coal is concerned, the Pocahontas district in southern West Virginia had the largest tonnage during the fiscal year ending June 30, 1919. Figures compiled by the Department of Mines of West Virginia show that the total output in the Pocahontas region was 18,791,559 gross tons. The New River district came next with 11,850,513 gross tons, while the Fairmont region came third with 11,313,774 gross tons, although the Kanawha district with 10,234,964 gross tons and the Logan district with a production of 9,726,145 gross tons were not far behind.

The table following shows all companies that produced 100,000 gross tons or more during the fiscal year of 1919. The figures in parentheses after the name of the company indicate the district or districts in which that company had producing operations. The districts used in this classification are as follows: (1) Panhandle, viz., Brooke, Ohio and Marshall Counties; (2) Fairmont, viz., Harrison, Marion, Monongalia and Wetzel Counties; (3) Preston-Barbour district, viz., Barbour, Braxton, Gilmer, Greenbrier, Lewis, Preston, Taylor, Upshur and Webster Counties and the northern part of Nicholas County; (4) Elk Garden, viz., Grant, Mineral, Randolph and Tucker Counties; (5) Mason County; (6) Putnam County; (7) Kanawha field, viz., Boone north of Greenview, Clay, northern Fayette, Kanawha, western Lincoln, southern Nicholas and the northern part of Raleigh; (8) New River field, viz., eastern Fayette, southern Greenbrier, southern Raleigh, Summers and Wyoming Counties; (9)

Logan district, viz., southern Boone, eastern Lincoln and Logan; (10) Pocahontas district, viz., McDowell and Mercer Counties, and (11) Mingo-Thacker district, viz., Mingo and Wayne Counties. More detailed figures covering all operations of 25,000 tons or more appear under the heading of "West Virginia Production by Districts," pages 64 to 69.

Company and District	Gross Tons
United States C. & C. Co. (10)	4,229,407
Consol. Coal Co. (2, 3)	3,659,901
Pocahontas Fuel Co., Inc. (8, 10) ..	3,325,490
Island Creek Coal Co. (9)	1,784,229
N. R. & Poca. Cons. Coal Co. (8, 10)	1,394,189
Davis Coal & Coke Co. (3, 4)	1,379,981
Solvay Collieries Co. (7, 10)	1,116,469
West Va. Coal & Coke Co. (3, 4) ..	851,441
Main Island Creek Coal Co. (9)	897,751
Cabin Creek Cons. Coal Co. (7)	820,225
New Eng. Fuel & Trans. Co. (2)	734,020
Hutchinson Coal Co. (2, 5)	690,029
Kanawha & Hock. C. & C. (7)	686,154
Jamison C. & C. Co. (2)	680,297
New R. Col. Co. (8)	672,326
E. E. White Coal Co. (8)	616,406
West'n Poca. Fuel Co. (8)	587,049
Carbon Fuel Co. (7)	586,189
West Va.-Pitts. Coal Co. (1)	558,547
Paint Cr. CM. Co. (7, 8)	529,178
Cannelton C. & C. Co. (7, 9)	519,246
Excelsior Poca. Coal Co. (10)	502,702
Elkhorn Piney CM. Co. (7, 8)	491,434
White Oak Fuel Co. (8)	474,114
Consumers Fuel Co. (1, 2)	470,315
Md. Coal Co. of W. Va. (8)	465,975
Logan Mining Co. (9)	461,107
American Coal Co. (10)	460,474
Kelleys Creek Colliery Co. (7)	435,345
Crozer Coal & Coke Co. (10)	411,043
Boone County Coal Corp. (7, 9)	406,679
Boomer Coal & Coke Co. (7)	398,447
Cranberry Fuel Co. (8)	394,038
Raleigh Coal & Coke Co. (8)	391,508
Lorain Coal & Dock Co. (9)	383,750
McKell Coal & Coke Co. (8)	376,331
Central Poca. Coal Co. (10)	351,720
Virginia & Pittsburgh C. & C. Co. (2)	351,242
Elkins Coal & Coke Co. (2, 3)	344,696
Carter Coal Co. (10)	335,223
Turkey Gap C. & C. Co. (10)	324,462
Winding Gulf Colliery Co. (8)	319,774
Thacker C. & C. Co. (11)	319,184
Peerless C. & C. Co. (10)	314,643
Houston Collieries Co. (10)	306,704
Cleveland Cliffs Iron Co. (9)	304,961
Elk River Coal & Lumber Co. (7) ..	293,223
Century Coal Co. (3)	295,334
Page Coal & Coke Co. (10)	294,042
Standard Island Creek Coal Co. (9)	293,851
Whittaker-Glessner Co. (1, 9)	288,822
Fitchman Coal & Coke Co. (1)	287,313
Pulaski Iron Co. (10)	285,103
Richland Coal Co. (1)	284,758
Campbells Creek Coal Co. (7)	283,424
United Pocahontas Coal Co. (10) ..	282,674
J. B. B. Coal Co. (10)	281,275
Dawson Coal Co. (2)	268,968
Richland Block Coal Co. (1)	264,610
Howard Colliery Co. (11)	264,259
Monitor C. & C. Co. (9)	254,709
Red Jacket Cons. C. & C. Co. (11) ..	253,857

Company and District	Gross Tons
Houston Coal & Coke Co. (10)	253,156
Slab Fork Coal Co. (8)	252,769
Lundale Coal Co. (9)	251,411
Four States Coal Co. (2)	246,774
Keystone Coal & Coke Co. (10)	244,183
Wyatt Coal Co. (7)	244,114
Fairmont & Cleveland Coal Co. (2) ..	242,152
Ashland C. & C. Co. (10)	236,125
Gaulley Mountain Coal Co. (8)	233,934
Amherst Coal Co. (9)	232,581
Wheeling Steel & Iron Co. (1)	228,591
Buffalo Eagle Colliery Co. (9)	225,809
Lynchburg C. & C. Co. (10)	220,857
Upland Coal & Coke Co. (10)	218,072
Loup Creek Colliery Co. (7)	217,687
Premier Pocahontas Coal Co. (10) ..	213,611
Elm Grove Mining Co. (1)	209,671
Richland Mining Co. (1)	208,220
Stuart Colliery Co. (8)	205,815
Madeira-Hill-Clark Coal Co. (2)	204,445
Monte Coal Co. (9)	201,644
MacAlpin Coal Co. (8)	201,085
Lake Superior Coal Co. (10)	200,332
Powhatan Coal & Coke Co. (10)	200,294
Black Betsey Cons. Coal Co. (6, 7) ..	196,836
King Coal Company (10)	193,250
Commonw. Power, Ry. & Lt. Co. (9)	191,925
Empire Coal & Coke Co. (10)	190,679
Harry B. C. & C. Co. (2)	186,723
Buckhannon River Coal Co. (3)	182,401
Aracoma Coal Co. (9)	179,684
Harvey Coal & Coke Co. (8)	175,502
Elkhorn Coal & Coke Co. (10)	174,845
Ben Franklin Coal Co. of W. Va. ..	172,884
Weyanoke Coal & Coke Co. (10)	172,610
Low Moor Iron Co. of Va. (8)	169,052
McDowell Coal Co. (10)	168,521
Superior Pocahontas Coal Co. (10) ..	166,524
Mill Creek Coal & Coke Co. (10) ..	166,007
Imperial Colliery Co. (7)	164,301
Crystal Block C. & C. Co. (10)	163,808
Long Coal Mining Co. (2)	162,335
Thomas Coal Co. (10)	160,190
Prockter Coal Co. (9)	160,125
Monongahela Val. Trac. Co. (2)	159,117
Bottom Creek Coal & Coke Co. (10) ..	157,365
Paragon Colliery Co. (9)	156,899
Tidewater Coal & Coke Co. (10)	156,361
Pemberton Coal & Coke Co. (8)	156,044
Omar Coal Co. (9)	154,858
Simpson Creek Coal Co. (3)	154,711
Cambria Coal Co. (2)	152,624
Eureka Coal Co. (2)	152,490
Mallory Coal Co. (9)	150,889
Long Branch Coal Co. (8)	149,873
North American Coal Co. (2)	147,524
Dunn Loup C. & C. Co. (8)	145,726
Lillybrook Coal Co. (8)	145,600
Francois Coal Co. (2)	145,306
American Rolling Mills Co. (7)	143,290
Yukon Pocahontas Coal Co. (10)	142,257
Merchants Coal Corporation (8)	140,831

Company and District	Gross Tons	Company and District	Gross Tons
Sycamore Coal Co. (11)	140,072	Beckley Coal & Coke Co. (8)	119,513
Mabscott Coal Co. (8)	139,840	Spruce River Coal Co. (7)	118,873
Warrior Coal Co. (10)	138,709	Louisville Coal & Coke Co.	118,187
Ennis Coal & Coke Co. (10)	136,857	Eureka Coal Co. (7)	117,511
Rum Creek Col. & By-Product Co. (9) ..	134,140	Webb Coal Mining Co. (7)	117,804
Gay Coal & Coke Co. (9)	134,080	Wet Branch Mining Co. (7)	115,823
Winifrede Coal Co. (7)	133,087	Otto Marmet C. & M. Co. (6)	115,284
War Eagle Coal Co. (11)	132,046	New Pocahontas Coal Co. (10)	115,211
Mineral States Coal Co. (1)	130,246	Litz Smith Island Creek Coal Co. (9) ..	114,685
Carbon Hill Collieries Co. (9)	130,300	MacGregor Coal Co. (9)	114,180
Gilliam Coal & Coke Co. (10)	130,028	Alpha Pocahontas Coal Co. (8)	114,156
Illinois Com'l CM. Co. (9)	127,641	Plymouth Coal & Mining Co. (6)	113,216
Algoma Coal & Coke Co. (10)	125,729	Preston County Coke Co. (8)	112,422
Crystal Coal & Coke Co. (10)	125,249	Bailey Wood Coal Co. (8)	112,246
Elkhorn Coal Corporation (3)	123,417	Wyoming Coal Co. (8)	111,094
Mead Tolliver Coal Co. (8)	122,756	Star Coal & Coke Co. (8)	110,115
Anchor Coal Co. (7)	122,738	Milburn By-Products Coal Co. (7) ..	110,000
Turkey Knob Coal Co. (8)	121,662	Deagans Eagle Coal Co. (9)	107,885
Ford Run Franklin C. & C. Corp (3) ..	120,392	Rich Creek Coal Co. (9)	107,288
Marshall Coal Co. (8)	120,369	Pittsvein Coal Co. (8)	107,247
Buckeye Coal & Coke Co. (10)	120,292	Prudence Coal Co. (8)	104,622
Cleve. & Morgantown Coal Co. (2) ..	120,279	Roanoke Coal & Coke Co. (10)	104,185
Coalburg Colliery Co. (7)	120,000	Williamson Coal & Coke Co. (11) ..	104,106
Cumberland Coal Co. (4)	119,857	Scotia Coal & Coke Co. (8)	100,527
Blue Creek Coal & Land Co. (7) ..	119,575	Rosedale Coal Co (3)	109,491

COAL PRODUCTION OF ILLINOIS

Illinois has the distinction of being the first state where the deposit of bituminous coal was noted by the early explorers. Credit for this mention belongs, not to Father Hennepin, as has been generally attributed, but to Fathers Joliet and Marquette. The Joliet map of 1674, based on travels of the year preceding, located coal in what is now La Salle County. Development of the resources of the state, however, did not begin till nearly 150 years later, and then the first commercial exploitation was in the southern part of the state. Mines were opened in Jackson County in 1810 near Brownsville. St. Clair County, in the Belleville or Standard district, was also opened up at about the same time. The earliest recorded production, 6,000 tons, was in 1833.

The northern field, the site of the original coal discovery, did not begin to come into prominence until after the close of the Civil War, when Boston and Chicago capitalists joined in the exploitation of the Wilmington mines; interests there were soon consolidated and the outgrowth of the combination was what is now known as the Chicago, Wilmington & Franklin Coal Co. As time went on, the northern field, with its high cost, thin vein, long-wall mines, yielded place to operations in the central part of the state. This field in turn held the supremacy until about the beginning of the present century when the southern district came into prominence. This field, embracing Franklin, Saline, Williamson and portions of Perry and Jackson Counties, is now the most important producing area in the state; indeed, this district and the fourth vein beds of Indiana may be said to be the most important coal deposits west of the Appalachian range.

Illinois first reached the 1,000,000-ton mark in 1864; 5,000,000 tons were mined in 1876; the 10,000,000 figure was passed in 1883 and 25,000,000 tons were first produced in 1900; by 1907, the 45,000,000-ton mark had ceased to be a goal. Production since that date, according to reports of the state authorities, has been as follows:

Year ending June 30,	Tons	Year ending June 30,	Year ending June 30,	Tons	
1908.....	49,272,452	1910.....	48,717,852	1912.....	57,514,240
1909.....	49,163,710	1911.....	50,165,099	1913.....	61,846,204

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Year Ending June 30,	Tons	Year Ending June 30,	Tons	Year Ending June 30,	Tons
1914.....	60,715,795	1916.....	63,673,530	1918.....	89,979,469
1915.....	57,601,694	1917.....	78,983,527	1919.....	75,099,784

The estimated production for the calendar year of 1919 was 64,600,000 tons.

DISTRIBUTION OF ILLINOIS COAL

Coal distribution by calendar years, as furnished by the United States Geological Survey, shows the following situation:

Year	Shipments	Local	At Mines	For Coke at Mines	Total
1910.....	41,818,730	2,666,614	1,400,352	14,550	45,900,246
1911.....	49,163,827	2,806,197	1,623,319	85,775	53,679,118
1912.....	55,304,530	2,793,861	1,786,835	.....	59,885,226
1913.....	57,329,079	2,568,957	1,720,708	.....	61,618,744
1914.....	53,583,390	2,516,503	1,489,304	.....	57,589,197
1915.....	54,826,393	2,470,114	1,533,069	.....	58,829,576
1916.....	61,486,342	3,086,157	1,622,837	.....	66,195,336
1917.....	80,283,347	3,541,792	2,374,250	.....	86,199,387
1918.....	83,268,864	3,641,044	2,381,197	.....	89,291,105

As before stated, the output for the fiscal year of 1919 was 75,099,784 tons; of this amount, 73,751,721 tons were produced by commercial mines, i. e.; operations having railroad connections, and 1,346,063 tons by local banks. In 1918, 88,306,228 tons were mined by the commercial and 1,623,241 tons by the local operations. At the close of the period under review, June 30, 1919, there were 373 commercial and 564 local mines running: this was an increase of three in commercial and a decrease of 33 in the number of local mines, as compared with figures for the year ending June 30, 1918. The commercial mines averaged 192 days' operation, as compared with 230 in 1918. Local banks averaged 138 days in 1919 and 154 in 1918.

Fifty-one counties in Illinois produce coal. The output by counties in which 50,000 tons or more were produced in 1917 or 1918 are shown in the following table. The figures given are for the calendar years.

County	1917	1918	County	1917	1918
Bond ¹	291,903	380,869	Marion	1,120,426	1,119,206
Bureau	1,363,362	1,181,179	Marshall	437,087	310,784
Christian	3,133,360	3,340,377	Menard	213,478	203,477
Clinton	1,464,722	1,533,702	Mercer	268,791	287,443
Franklin	11,455,238	12,373,356	Montgomery ..	4,204,722	4,231,122
Fulton	2,820,495	2,552,105	Peoria	1,547,916	1,295,460
Gallatin ²	74,737	227,444	Perry	2,739,914	2,917,590
Greene	268,006 ³	228,837	Randolph	1,397,629	1,627,414
Grundy	418,033	317,801	Rock Island ..	55,082	36,068
Henry	50,032	41,332	St. Clair	6,955,766	7,810,186
Jackson	807,160	1,055,225	Saline	5,188,777	5,684,594
La Salle	1,151,156	1,083,879	Sangamon	8,062,735	8,331,764
Livingston	125,163	105,341	Shelby	132,591	193,346
Logan	599,744	.....⁴	Tazewell	508,215	484,681
McLean	1,089,417	1,309,736	Vermilion	3,886,480	3,973,478
Macon	308,053	347,400	Washington ...	812,563	821,357
Macoupin	7,070,146	7,381,165	Williamson	10,645,697	11,338,562
Madison	5,364,251	5,074,383	Total ⁵	86,199,387	89,291,105

¹ Includes White County.

² Includes Johnson County.

³ Includes McDonough, Moultrie and Stark Counties.

⁴ Includes Logan, Putnam, Will and Woodford Counties.

⁵ Totals over all producing counties.

⁶ Included under McLean County.

LARGE ILLINOIS OPERATORS

Comparative statistics for companies producing over 1,000,000 tons during the fiscal years of 1918 and 1917 follow:

Company	1918		1917	
	Mines	Tonnage	Mines	Tonnage
Old Ben Coal Corp.	6	4,768,201	6	5,085,532
Peabody Coal Co.	7	3,982,468	7	3,450,004
C., W. & F. Coal Co.	7	3,947,970	3	1,961,834
Consolidated Coal Co.	6	3,433,850	6	3,053,308
Superior Coal Co.	4	3,259,583	3	3,115,546
Madison Coal Corp.	6	2,660,851	4	2,160,232
Springfield District CM. Co.	7	2,597,210	7	2,299,248
U. S. Fuel Co.	5	2,510,235	5	2,161,112
O'Gara Coal Co.	7	2,285,379	7	1,975,870
C. & E. I. Mines	5	2,141,664	5	1,928,633
Sou. C., C. & M. Co.	6	1,616,044	5	1,391,372
Donk Bros. Coal Co.	3	1,518,267	3	1,674,885
Big Muddy C. & I. Co.	4	1,339,225	4	1,306,876
Saline County Coal Co.	4	1,292,756	3	985,302
Taylor Coal Co.	4	1,231,257	4	874,013
St. L. & O'F. Coal Co.	2	1,124,960	2	1,027,475
Mt. Olive & Staunton Coal Co.	2	1,094,510	2	1,046,178
W. P. Rend Coal Co.	2	1,046,119	2	1,029,455

The 1918 list shows two additions, the Taylor Coal Co. and the Saline County Coal Co. The Bell & Zoller Coal Co., which produced 1,065,359 tons in 1917, did not reach the 1,000,000-ton class in 1918.

OHIO'S COAL PRODUCTION

The State of Ohio has long been an important coal producer but, in common with the other sections of the Central Competitive Field, it showed a marked decrease in production during the calendar year of 1919. Early development of Ohio territory, coupled with the growth of manufacturing due to the presence of iron ore in the state, the heavy call for railroad fuel by the big trunk lines traversing the commonwealth and the increase in the coal traffic from the Lake Erie ports to the Head of the Lakes have all combined to make and keep the coal business one of the greatest industries of the state.

For many years, Ohio ranked second in point of bituminous production. The rapid expansion of Illinois forced it to drop to third place in 1875 and when West Virginia jumped ahead of Illinois in 1906 and again in 1909, Ohio fell to fourth position, which it has held, with the exception of the year 1914, when prolonged labor troubles in the Buckeye State gave Kentucky fourth place. With the growth of West Virginia on the southeast, Illinois on the west and Kentucky on the south, the competitive conditions surrounding the marketing of the Ohio product have increased. Although Illinois coal has not moved east of the Ohio-Indiana state line to any great extent, its competition has curtailed the tonnages placed by Ohio west of that line, while West Virginia and Kentucky, as well as Pennsylvania, have been strong factors in Ohio's home markets.

About three years ago, Ohio started a campaign to recover some of the ground lost in Illinois and territory west by giving greater attention to the question of sizing, which has been carried to a point of high refinement in Illinois, but the European War so increased local demands that the program was temporarily laid aside. During 1918, distribution was subject to the federal zoning

system described in detail in the 46th annual edition of **THE COAL TRADE** (pages 195-199), but since the removal of the zoning restrictions, Ohio operators are again turning their eyes westward. Another factor that has militated against the Ohio domestic trade has been the use of natural gas, but the supply of that fuel has proved so uncertain in emergencies that it promises to become less of a bar to the growth of the Ohio coal industry.

The tonnage in this state in the years named, according to figures of the Industrial Commission, has been as below:

Year	Tons	Year	Tons	Year	Tons
1908.....	26,268,239	1912.....	34,444,291	1916.....	34,526,552
1909.....	27,756,192	1913.....	36,285,468	1917.....	41,677,986
1910.....	34,424,951	1914.....	18,182,940	1918.....	47,849,236
1911.....	30,342,039	1915.....	22,627,046	1919.....	*35,050,000

*Estimated.

Production in net tons, by counties, according to the United States Geological Survey, in recent years has been:

County	1913	1914	1915	1916	1917	1918
Athens	4,968,633	3,298,189	2,520,488	3,711,931	6,156,228	6,629,564
Belmont	10,436,259	2,849,181	4,304,566	10,330,941	11,166,504	11,852,508
Carroll	379,064	235,480	344,966	301,137	432,827	451,024
Columbiana	522,804	342,366	541,862	589,527	566,317	673,271
Coshocton	364,411	153,046	198,434	293,298	301,152	351,872
Gallia, Morgan and Scioto	298,744	207,924	109,380	259,028	339,498	395,444
Guernsey	4,321,992	2,936,707	3,232,961	4,386,161	3,949,852	4,298,812
Harrison	730,221	184,892	214,630	973,628	1,216,253	2,070,414
Hocking	1,678,623	1,231,340	1,264,529	1,401,453	1,954,081	2,083,928
Holmes	8,987	8,934	6,117	5,180	14,636	3,400
Jackson	587,044	532,831	565,309	694,100	863,842	836,710
Jefferson	5,178,922	2,172,881	3,608,453	5,532,929	5,597,720	6,689,936
Lawrence	176,098	160,077	127,373	179,497	215,754	273,147
Mahoning	15,786	15,903	12,556	19,073	42,028	34,451
Medina, Portage and Summit	†158,174	125,063	115,124	116,903	127,918	228,834
Meigs	642,725	534,784	943,889	1,008,935	1,171,836	1,299,044
Muskingum	472,748	328,329	386,986	376,286	476,812	573,836
Noble	787,141	501,942	596,786	857,527	912,896	986,189
Perry	2,177,564	1,186,674	1,136,476	1,334,759	2,376,084	3,116,432
Stark	417,238	457,933	352,020	296,381	373,222	533,591
Tuscarawas	1,419,922	921,236	1,367,535	1,504,496	1,747,797	1,939,928
Vinton	122,492	84,372	103,804	104,867	196,329	239,123
Wayne	97,233	88,345	74,649	137,649	124,098	25,683
Small mines	237,702	284,686	305,798	312,533	425,050	225,802
Total	36,200,527	18,843,115	22,434,691	34,728,219	40,748,734	45,812,943

†Includes Trumbull County.

COAL PRODUCTION OF KENTUCKY

Kentucky continues to hold fifth place among the bituminous producing states by a comfortable margin, and, in view of the many new developments that are in progress in the eastern part of the commonwealth, its position seems assured for some years to come. Ohio, which Kentucky passed during the strike of 1914, now exceeds the Kentucky mines in output by less than 7,000,000 tons, and the rapid strides that have been made since 1906, when the Kentucky

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output was only 9,526,425 tons and the more virgin possibilities of the Blue Grass districts, suggest that a struggle for position may not be far distant.

The tonnage in Kentucky since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908	9,805,777	1912	16,323,904	1916	25,291,367
1909	10,296,145	1913	19,421,288	1917	27,807,971
1910	14,720,011	1914	20,168,150	1918	31,612,617
1911	13,924,811	1915	21,361,674	1919	*28,500,000

*Estimated.

By districts the output has been as follows:

District	1913	1914	1915	1916	1917	1918
Western	8,436,155	7,794,807	7,541,856	7,727,028	10,304,423	10,798,690
Southeastern	6,061,626	6,137,824	6,261,459	6,911,432	6,343,180	8,025,955
Northeastern	4,923,507	6,235,519	7,422,893	10,653,907	11,160,368	12,697,068
Total	19,421,288	20,168,150	21,361,674	25,291,367	27,807,971	31,612,617

The same statistics, by counties and districts, for the years 1913 to 1918, are shown in the following tables:

WESTERN DISTRICT

County	1913	1914	1915	1916	1917	1918
Butler	675	2,016	.....	.....	.....	.....
Christian	65,120	51,853	*93,256	102,068	57,921	*85,259
Daviess	61,264	42,009	42,778	40,811	74,663	86,552
Hancock	2,872	202	4,000	10,500	.....	12,280
Henderson	185,423	144,696	166,704	169,572	292,447	394,062
Hopkins	2,519,356	2,501,949	2,332,143	2,605,812	3,052,001	2,987,377
McLean	80,957	38,599	†	72,482	113,468	154,871
Muhlenberg	2,584,200	2,249,711	2,232,045	2,015,859	3,411,816	3,650,473
Ohio	760,914	676,528	519,820	471,610	895,819	951,829
Union	662,549	581,221	742,110	662,966	915,358	992,973
Webster	1,512,825	1,506,023	1,409,000	1,575,748	1,400,987	1,483,014
Total	8,436,155	7,794,807	7,541,856	7,727,028	10,304,423	10,798,690

*Includes Butler County.

†Included in Christian County.

‡Includes 89,943 tons from small mines and Hancock County.

SOUTHEASTERN DISTRICT

Bell	2,459,138	2,433,201	2,306,831	2,237,340	2,079,122	2,447,875
Harlan	851,412	1,249,940	1,726,798	2,204,553	2,167,741	3,201,733
Knox	912,589	822,348	767,713	771,685	561,035	669,437
Laurel	218,936	164,503	85,136	77,321	80,203	129,027
McCreary	625,889	584,320	569,535	672,750	692,933	734,894
Whitley	981,932	882,691	805,446	947,783	762,146	842,989
Total	6,061,626	6,137,824	6,261,459	6,911,432	6,343,180	8,025,955

NORTHEASTERN DISTRICT

Boyd	110,265	88,318	78,000	72,439	101,714	110,644
Breathitt	12,738	34,297	74,592	12,825	55,881	179,136
Carter	110,055	83,471	83,413	130,436	150,554	187,777
Floyd	418,435	527,875	545,074	814,610	845,863	1,326,956
Jackson	.....	.....	.....	9,397	††19,021	*56,091
Johnson	841,356	940,340	975,464	1,061,481	869,802	791,241
Lawrence	65,286	65,309	†	10,612	38,631	47,066
Lee	22,759	4,870	†	6,623	30,997	57,705
Letcher	1,104,194	1,539,070	2,229,334	3,817,059	3,470,779	3,279,715

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County	1913	1914	1915	1916	1917	1918
Morgan	72,030	72,046	58,815	47,727	**69,680	63,332
Perry	25,632	243,661	547,962	995,091	1,660,795	2,120,223
Pike	2,140,757	2,636,262	2,830,239	3,675,607	3,846,651	4,473,442
Total	4,923,507	6,235,519	7,422,893	10,653,907	11,160,368	12,697,068
Grand total	19,421,288	20,168,150	21,361,674	25,291,367	27,807,971	31,612,617

*Includes Martin and Pulaski Counties.

†Included in Breathitt.

††Includes Pulaski County.

**Includes Knott and Martin Counties.

The totals shown included a small unclassified tonnage from minor operations.

Up to 1911 the annual production of the western field exceeded that of the eastern one, but in that year the output of the latter field passed that of the former and the annual excess has grown rapidly, as will be seen from the tables appearing above. In 1918, the coal output of the eastern field alone exceeded the total production for the entire state for 1914.

ALABAMA

Among the southern, as distinguished from the border states, Alabama is easily the most prominent coal producer. Coal has been mined there for upwards of 75 years, but it was not until after Reconstruction days that the output became prominent as a trade factor, and indeed up to about 1885 the Alabama output was exceeded by that of Tennessee and was approached by that of Kentucky, which formerly outranked it and has once more attained preeminence.

In the last 30 years relatively steady growth has been achieved, although the degree of activity depends largely upon the iron industry centered about Birmingham, a large portion of the coal tonnage being used in that district or on the railroads leading to and from that important center. In that part of the country the demand for domestic fuel is small and the section to the north and east is supplied largely from the mines of Tennessee. But Alabama coal finds an outlet to the west, south and southwest, a considerable quantity being forwarded to New Orleans. Under normal conditions, its all-rail distribution touches 15 states, while about 50 per cent. (exclusive of railroad fuel) is used at home and the activity of the trade is large gauged by the condition of affairs in the Birmingham district. Shipments to tidewater points under normal conditions reach Mobile, Pensacola, New Orleans, and Georgia and Carolina ports; the tonnage so handled in prewar days approximated 500,000 tons.

The tonnage of the State of Alabama since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908	10,974,591	1912	16,513,040	1916	18,234,625
1909	13,790,268	1913	17,907,284	1917	20,412,841
1910	16,139,228	1914	15,520,943	1918	19,184,962
1911	15,011,853	1915	14,927,937	1919	*15,230,000

*Estimated.

The following table shows production of coal by counties:

County	1913	1914	1915	1916	1917	1918
Jefferson	9,041,757	7,979,128	7,579,503	9,973,202	10,927,707	9,379,957
Walker	3,935,301	3,337,851	3,221,955	3,926,752	4,839,289	5,156,269
Bibb	1,948,542	1,666,055	1,534,534	1,507,141	1,507,669	1,374,548
Tuscaloosa	988,096	859,640	787,586	959,431	919,316	1,032,705
St. Clair	981,352	745,279	774,058	771,992	842,750	832,348
Etowah	60,394	44,750	177,368	53,407	49,929	130,538
Shelby	498,009	495,359	589,412	609,369	791,405	744,111
Blount	299,850	259,773	163,739	329,693	381,777	315,095

County	1913	1914	1915	1916	1917	1918
Cullman	61,545	31,439	.....	.....	.....	.....
Marion	60,455	71,718	68,890	77,658	108,795	.....
Winston	29,436	26,429	.....	25,202	40,938	76,527
Jackson	2,231	3,279	.....	778	3,266	.....
Total	17,907,284	15,520,943	14,927,937	18,234,625	20,412,841	19,184,962

The totals, in net tons, include estimated tonnage from certain counties, and some odd thousand tons from small operations.

The production of coke in this state during the year 1919 amounted to *3,920,000 tons; in 1918 to 4,352,172 tons; in 1917, to 4,868,598 tons; in 1916, to 4,385,493 tons; in 1915, to 2,780,976 tons; in 1914, to 3,092,780 tons; in 1913, 3,526,624 tons.

*Estimated.

COOPERATION INVITED

In a work of the character of THE COAL TRADE, covering as it does thousands of figures on production and distribution, the possibility of errors creeping into the compilation and printing is practically inescapable. Every effort is made to have this work one hundred per cent. accurate, but the labor is human and, therefore, fallible. The editor and publisher would, therefore, greatly appreciate having any errors discovered by the reader brought to their attention. Inasmuch as the publication is designed to be of greatest benefit to those that use it, any suggestion as to the arrangement of the material in subsequent editions, the inclusion of new matter or the elimination of old will be welcomed.

ARKANSAS COAL PRODUCTION

Although Arkansas is one of the most important of the coal-producing states in the Southwest, it is ringed about by such a group of oil and coal-bearing areas that its field of distribution under normal circumstances is narrow. Outside of the state itself, its best known coals are the semi-bituminous of the Bonanza-Huntington districts, an extension of the Hartshorne bed of Oklahoma, and the semi-anthracite of that same bed found further north in the Spadra district. These coals move not only into Missouri River cities and towns, but the smokeless has come as far east as Chicago and as far north as the Twin Cities. The production, however, is limited so that the sale of these coals in the markets last named is an intermittent rather than a permanent factor. The tonnage during the past few years has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	2,078,357	1912.....	2,100,819	1916.....	1,994,915
1909.....	2,377,157	1913.....	2,234,107	1917.....	2,143,579
1910.....	1,905,958	1914.....	1,836,540	1918.....	2,227,369
1911.....	2,106,789	1915.....	1,652,106	1919.....	*1,680,000

*Estimated.

Production by counties since 1913 has been as follows:

County	1913	1914	1915	1916	1917	1918
Johnson	166,208	148,845	176,457	243,774	306,948	371,704
Franklin	346,682	168,746	190,237	243,118	210,152	240,149
Sebastian	1,635,379	1,423,202	1,153,494	1,352,402	1,433,355	1,447,268
Logan	5,028	7,112	29,505	42,128	46,950	49,368
Pope	79,608	†	†	†	†	†
Other counties	1,202	88,577	102,413	113,493	†146,174	**118,880
Totals	2,234,107	1,836,540	1,652,106	1,994,915	2,143,579	2,227,369

†Included under "other countries."

*Includes Ouachita, Pope, Scott and Washington Counties and small mines.

**Includes Pope and Scott Counties and small mines.

THE COAL OUTPUT OF CALIFORNIA

California has never figured as an important coal producing state, for since 1861, when records were first kept, the total output up to the present time has amounted to less than 5,200,000 tons. The coal mining industry of the state had its period of greatest activity in 1880, when 236,950 tons were produced. Then the business began to wane, and the great development of the California petroleum deposits in the last 20 years has made the decline all the more rapid. In 1917, the last year for which information is available, only one small mine was in operation and its output combined with two Idaho properties was only 6,423 tons.

California coal is sub-bituminous, or lignite, and its poor quality shuts it out from competitive markets, and it is sold only for local use. The rest of the coal normally used in California is imported from Australia and British Columbia, or is received by water from Washington and by rail from Colorado, Utah, Wyoming and New Mexico. Smithing coal is shipped to California from Pennsylvania, Maryland and West Virginia. In 1917 the state (exclusive of railroad and steamship requirements) consumed 890,694 tons of bituminous, of which 43,927 tons were imported and 85,334 tons were received by tidewater. The domestic sources of California's bituminous supply that year and the tonnages received from each were as follows: California and Idaho, 6,423; Colorado, 30,000; New Mexico, 85,000; Utah and southern Wyoming, 590,000, and Washington, 50,000 tons. The anthracite tonnage is inconsiderable; it was only 1,175 tons during the year ended March 31, 1917.

COAL PRODUCTION OF COLORADO

Colorado coal production statistics have shown an up-and-down tendency during the past decade. The output by years since 1908, as reported by the state mine inspector, was as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	9,773,007	1912.....	11,016,948	1916.....	10,260,948
1909.....	10,772,490	1913.....	9,268,939	1917.....	12,433,129
1910.....	12,104,887	1914.....	8,167,501	1918.....	12,656,877
1911.....	10,197,595	1915.....	8,715,397	1919.....	10,406,543

Figures covering county production, as compiled by the United States Geological Survey, appear in the following table. While the totals reported vary slightly from those of the state mine inspector, the differences are not great.

Counties	1914	1915	1916	1917	1918	1919*
Las Animas	2,693,288	2,853,847	4,042,937	4,359,844	4,250,281	3,316,871
Huerfano	1,724,265	1,682,335	1,884,943	2,411,440	2,586,911	1,938,570
Boulder	1,000,590	946,888	1,057,539	1,277,663	1,360,261	1,150,706
Fremont	169,271	473,284	605,108	871,846	871,326	833,394
Gunnison	402,045	439,403	512,265	655,584	652,770	472,735
Pitkin	63,904	52,143	†42,861	†26,693	**98,078	**68,098
Jefferson	141,537	152,498	†185,704	†217,486	126,330	147,304
El Paso	280,577	299,883	312,670	371,166	301,647	310,855
Garfield	112,842	139,393	133,771	104,463	92,655	21,592
La Plata	132,317	117,502	108,603	139,478	138,963	116,509
Weld	475,734	432,501	464,959	654,977	687,609	658,810
Mesa	163,894	101,327	132,111	179,222	191,043	105,487
Delta	86,861	69,053	70,696	94,569	89,476	88,682
Routt	666,384	852,315	915,028	1,074,103	941,355	1,168,310
Other counties	57,050	10,233	15,042	44,802	18,856	8,620
Total	8,170,559	8,624,980	10,484,237	12,483,336	12,407,571	10,406,543

*State mine inspector's figures.

†Includes Jackson County.

**Includes Jackson and Rio Blanco Counties.

†Includes Rio Blanco County.

INDIANA OUTPUT

Indiana, in common with other states in the Central Competitive Field, suffered a heavy loss in production during 1919. This loss is estimated by the United States Geological Survey at 10,178,634 tons, or over 33 per cent. The total output by years since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	12,314,890	1912.....	15,285,718	1916.....	20,093,528
1909.....	14,834,259	1913.....	17,165,671	1917.....	26,539,329
1910.....	18,839,815	1914.....	16,641,132	1918.....	30,678,634
1911.....	14,201,355	1915.....	17,006,152	1919.....	*20,500,000

*Estimated.

OUTPUT BY COUNTIES

By counties the output since 1913 has been as follows:

Counties	1913	1914	1915	1916	1917	1918
Clay	564,957	454,009	295,451	629,522	1,141,029	1,572,582
Daviess	84,030	91,608	79,061	78,537	147,224	215,808
Dubois	7,948	5,400	3,000	*94,601	*87,378	**266,520
Fountain	60,200	38,458	†23,800	†13,911	†20,910	††15,280
Gibson	227,100	280,636	271,177	333,980	471,575	609,693
Greene	2,780,708	2,230,085	2,324,634	2,440,311	3,498,038	3,426,168
Knox	1,760,748	1,619,083	2,212,315	2,752,213	3,119,922	3,822,853
Owen	127,283	111,355	91,318	.....	.....	.....
Parke	507,508	331,845	166,648	281,697	387,055	313,996
Perry	14,910	13,800	11,075	.....	.....	.....
Pike	583,637	578,693	646,166	815,304	983,974	1,139,412
Spencer	8,479	8,510	6,695	6,746	5,081	8,456
Sullivan	3,084,419	2,999,148	2,587,108	2,763,433	3,528,902	4,346,857
Vanderburg	280,522	288,191	227,331	330,135	384,199	347,440
Vermilion	2,085,311	2,135,836	2,734,546	3,420,088	4,212,638	4,205,808
Vigo	4,237,274	4,767,828	4,688,838	5,285,542	7,303,343	8,935,376
Warren	4,702	2,306	.....	.....	.....	.....
Warrick	685,020	624,770	577,473	774,116	1,169,386	1,399,746
Various	65,617	59,571	59,516	73,392	78,675	52,639

Total net tons 17,165,671 16,641,132 17,006,152 20,093,528 26,539,329 30,678,634

*Includes tonnages from Owen and Perry Counties; Dubois not reported in 1917.

**Perry County only.

†Includes Warren County.

††Fountain County only.

During the fiscal year ended September 30, 1918, the state mine inspector reported a production of 551,184 tons of block coal. Vigo County mined 186,675; Clay, 295,847 and Parke County, 68,662 tons of the block coal. Bituminous production for the counties named was as follows: Vigo, 8,589,302; Clay, 773,206 and Parke County, 239,443 tons. Indiana consumed 301,195 tons of the block coal mined and 16,525,555 tons of bituminous.

Although the existence of coal deposits in Indiana was long known, early development was slow and for several years in the final decade of the last century, tonnage varied between 3,000,000 and 4,000,000 tons without notable increase. Growing demands of the West and Northwest at the beginning of the present century, coupled with inroads made upon markets for eastern lake coal gave an impetus to production. At first it was Sullivan and Greene County

that overshadowed the old Brazil block district; more recently Vigo and Vermillion Counties have been pushing to the front and the fourth vein coal from both the Clinton and Linton fields has been making an enviable name for itself. In the past few years rapid strides have been made by No. 5 coal in Knox County.

COAL TONNAGE OF IOWA

The coal product of Iowa is mined chiefly for local use within the state. A number of the cities of Iowa have coal mines within close proximity, if not within the city limits, and it is not necessary to find an outside market for more than a small proportion of the tonnage. Even the neighboring state of Minnesota takes little or none of the Iowa product under normal conditions.

The tonnage in years named has been as below:

Year	Tons	Year	Tons	Year	Tons
1908.....	7,161,310	1912.....	7,289,529	1916.....	7,260,800
1909.....	7,757,762	1913.....	7,525,936	1917.....	8,965,830
1910.....	7,928,120	1914.....	7,451,022	1918.....	8,192,195
1911.....	7,331,648	1915.....	7,614,143	1919.....	*6,300,000

*Estimated.

Production by counties in recent years, as reported by the United States Geological Survey has been as follows:

County	1914	1915	1916	1917	1918	1919
Appanoose	1,272,276	1,225,500	1,227,127	1,663,454	1,559,253	1,009,895
Boone	181,952	156,260	170,582	244,721	277,619	146,689
Dallas	466,697	470,481	473,971	588,477	527,478	354,573
Jasper	241,991	268,167	232,825	304,212	248,951	138,590
Lucas	295,642	†597,784	†742,304	†776,320	503,521	398,859
Mahaska	272,868	245,786	159,395	145,820	221,860	75,418
Marion	311,183	360,155	361,800	504,999	609,266	539,198
Monroe	2,273,066	2,157,349	1,772,614	2,446,670	2,317,929	1,723,438
Polk	1,706,779	1,744,304	1,719,844	1,845,839	1,434,433	897,121
Wapello	237,176	313,993	316,332	346,509	245,166	165,221
Wayne	76,524	.....	.....	.....	**146,872	**86,023
Total *	7,451,022	7,614,143	7,260,800	8,965,830	8,192,195	5,571,630

*Including other counties and small mines.

**Includes Davis, Greene and Warren Counties in 1918; Greene and Warren in 1919.

†Includes Greene, Warren and Wayne Counties.

‡From report of state mine inspection.

KANSAS COAL TONNAGES

The tonnage in the years named has been as below:

Year	Tons	Year	Tons	Year	Tons
1911.....	6,178,728	1914.....	6,860,988	1917.....	7,184,975
1912.....	6,986,182	1915.....	6,824,474	1918.....	7,561,947
1913.....	7,202,210	1916.....	6,881,455	1919.....	*5,750,000

*Estimated.

Production by counties has been in recent years:

County	1913	1914	1915	1916	1917	1918
Cherokee	2,259,019	1,882,810	1,707,456	1,529,453	1,396,395	1,311,230
Crawford	4,614,257	4,752,114	4,843,232	5,053,239	5,513,556	5,984,551
Leavenworth	161,209	101,791	153,055	149,622	158,709	134,710
Linn	25,212	10,480	10,541	8,306	105,535	8,739

County	1913	1914	1915	1916	1917	1918
Osage	115,810	88,371	100,779	125,221	†	106,623
Other counties	26,703	16,422	9,411	15,614	10,780	16,094
Total	7,202,210	6,860,988	6,824,474	6,881,455	7,184,975	7,561,947

†Included in figures for Linn County.

The coal produced in this state is mainly consumed within the state for manufacturing, railroad or domestic purposes, although Kansas City, Mo., on the state line, until within the past few years, was a very large buyer of Kansas coal. Placement of substantial orders for central Illinois screenings for the street railway and certain other large consumers at Kansas City cut into the Kansas trade. This movement of Illinois coal was suspended under the zone system of the United States Fuel Administration, but, following the lifting of those regulations early in 1919, shipments were resumed. Coal mining by the stripping method has made considerable progress in the state of late, amounting to 858,370 tons in 1916, and 806,985 tons in 1917.

COAL PRODUCTION OF MARYLAND

Maryland, according to the records of the United States Geological Survey, was the pioneer among the bituminous producing states of the Union. Coal was discovered in the Georges Creek basin as early as 1782. Between 1807 and 1820, the estimated production of the state was 3,000 tons. The next record set down was in 1832, when the state was credited with 12,000 tons. It was about that time (1830) that the first eastern shipments were floated down the Potomac on barges. In 1836 the first mining company was incorporated. After the construction of the Baltimore & Ohio R.R. in 1842 and the Chesapeake & Ohio Canal in 1850, the output from the Maryland mines increased rapidly. The attempt to ship coal from the mines by barges, prior to advent of the B. & O. R.R., was not long continued. The method was too destructive to life and was the cause of so much loss in coal that it was soon abandoned, and it was not until 1842 that the industry really began to assume importance.

At the present time, over 75 per cent. of the tonnage produced is mined in Allegany County. Out of a total production of 4,497,297 net tons in 1918, that county mined 3,490,326 net tons; Garrett County, to the west, 983,192, and small mines, 23,779 tons. In 1915, the respective figures were 3,388,365 tons, 782,976 and 9,136 tons; in 1916, Allegany County mined 3,454,454 tons; Garrett, 994,694 and small mines, 10,898 tons; in 1917, Allegany County mined 3,727,609 tons; Garrett, 992,867 tons and small mines, 25,448 tons.

The total tonnage by years since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	4,377,093	1912.....	4,964,038	1916.....	4,460,046
1909.....	4,023,241	1913.....	4,779,839	1917.....	4,745,924
1910.....	5,217,125	1914.....	4,133,547	1918.....	4,497,297
1911.....	4,685,795	1915.....	4,180,477	1919.....	*2,970,000

*Estimated.

Maryland and the adjoining counties in West Virginia, which make up what is known as the Cumberland region, constitute the only districts outside of the anthracite region of Pennsylvania where records of coal production have been kept from the earliest years. These districts have been commonly known as the Georges Creek or Cumberland and the Piedmont regions. The Cumberland region was opened in 1842. The Piedmont region began shipping in 1853.

Distribution of Maryland shipments originating chiefly on the Cumberland & Pennsylvania R.R., the chief and once the only outlet from the Georges Creek mines, and the Georges Creek & Cumberland, now part of the Western Maryland, is shown on the next page.

Year	B. & O. R.R. Gross tons	C. & O. Canal Gross tons	Penn. R.R. Gross tons	West. Md. Gross tons	Total Gross tons
1910.....	2,725,290	170,856	344,597	523,264	3,764,007
1911.....	2,592,913	165,990	300,896	302,636	3,362,435
1912.....	2,711,288	172,490	307,515	393,288	3,584,581
1913.....	2,710,518	176,592	285,961	439,009	3,612,080
1914.....	2,426,173	171,216	200,770	277,445	3,075,604
1915.....	1,791,402	174,320	163,157	898,280	3,027,159
1916.....	1,558,803	158,155	173,332	1,130,397	3,020,687
1917.....	1,457,186	151,258	173,696	1,485,224	3,267,364
1918.....	1,572,160	138,122	236,712	1,258,896	3,205,890
1919.....	958,673	133,571	120,448	902,713	2,115,405

The coal tonnage of Maryland, as reported by the C. & P. R.R. Co., excludes output from certain mines sometimes included in the North Potomac basin of pit against other grades, except at higher prices. There are still, however, West Virginia, viz.: Dill No. 2, Barnum, Hubbard, Dodson, Darwin and Chaffee. While these mines and certain others are located in Maryland the coal is transported across the river into West Virginia and there loaded on cars for shipment. In addition there is also to be added to the above figures, in arriving at total output, coal used at mines and locally, from small mines and country banks and the output of Garrett County mines shipped via the B. & O., which amounts to about 100,000 tons annually.

Considerable tonnage from workings of the olden time is now being made available but several large concerns of the district have found it necessary to go into other districts to keep up their tonnage record. The good coal from this state is always in demand, as it is a staple article for blacksmithing and forging in all parts of the country. Its value as a steam fuel is also very well known and credited, but the limited amount available makes it too valuable to many industrial concerns willing to pay this extra price.

MICHIGAN

Coal tonnage produced in Michigan during a series of years has been:

Year	Tons	Year	Tons	Year	Tons
1908.....	1,835,019	1912.....	1,206,230	1916.....	1,180,360
1909.....	1,784,692	1913.....	1,231,786	1917.....	1,374,805
1910.....	1,534,697	1914.....	1,283,030	1918.....	1,464,818
1911.....	1,476,074	1915.....	1,156,138	1919.....	* 930,000

* Estimated.

For a period of several years, commencing upwards of a score of years ago, steady and notable progress was made in developing the coal resources and increasing the output of the State. The 1907 output (2,035,858 tons) was the largest achieved by the mines of the State.

Despite the claims of geologists as to resources, coal men are apparently agreed in the opinion that the Saginaw Valley, including Saginaw and Bay Counties, which contain practically all the coal in Michigan worth mentioning, will never be anything more than a source of supply for the district which it now serves, namely, upper part of lower peninsula and a portion of the upper. Coal has been mined in Michigan since 1835, the earlier mines being near the site of the city of Jackson.

Production by counties in recent years has been:

County	1913	1914	1915	1916	1917	1918
Bay	591,718	617,415	551,772	549,307	688,037	638,688
Saginaw	504,612	584,648	539,036	560,559	598,480	691,810

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County	1913	1914	1915	1916	1917	1918
Tuscola	†43,875	†80,967	†64,650	†70,178	†87,060
Total	1,231,786	1,283,030	1,156,138	1,180,360	**1,374,805	**1,464,818
†Includes Genesee and Ingram Counties.						
‡Includes Calhoun, Genesee and Shiawassee Counties.						
**Includes tonnages from other counties and small mines not otherwise classified.						

MISSOURI COAL PRODUCTION

Coal tonnage produced in Missouri during recent years has been as follows:

Year	Tons	Year	Tons	Year	Tons
1911.....	3,624,832	1914.....	3,935,980	1917.....	5,670,549
1912.....	4,211,033	1915.....	3,811,593	1918.....	5,667,730
1913.....	4,318,125	1916.....	4,742,146	1919.....	*4,060,000

*Estimated.

Missouri has a large area of coal fields, producing tonnage ranging in quality from fair to poor. It is a peculiar commercial fact that although this state long ranked as one of the large producers of the Union, and still does a fair business, it supplies practically no coal tonnage to its principal city, St. Louis, which draws all of its nearby supply from Illinois; only anthracite and special brands of bituminous coal being sent in from other points. The coal measures of Missouri are widely scattered, affording an ample supply for local use in the rural sections. The slow growth of such sections and the outside competition cause the coal production of this state to remain almost stationary.

Details of more important counties, showing output in net tons for several years are given below:

County	1913	1914	1915	1916	1917	1918
Adair	439,991	256,397	280,187	436,413	693,084	755,604
Barton	495,328	505,282	657,069	935,624	1,056,291	1,146,043
Bates	168,469	145,031	71,312	83,534	89,832	105,078
Boone .....	.....	.....	.....	18,556	16,410	16,129
Callaway .....	.....	.....	.....	61,814	60,881	48,139
Henry	261,196	224,894	183,311	171,933	110,557	79,290
Lafayette	729,606	703,029	799,297	907,116	961,739	1,009,554
Linn	117,625	108,626	97,242	108,338	128,512	148,266
Macon	778,264	765,365	666,245	795,631	924,667	812,677
Randolph	481,882	424,245	379,262	368,563	598,245	463,587
Ray	343,285	324,080	205,184	412,975	516,285	493,980
Total *	4,318,125	3,935,980	3,811,593	4,742,146	5,670,549	5,667,730

*Includes small counties.

The coal fields of Missouri are divided into four sections, or districts—the Northeastern, occupying Putnam and adjacent counties, the coal from which resembles the Centreville, Iowa, product; the North Central, including Macon, Randolph and adjacent counties, the most important coal district of the state; the Central West district, next in importance, including Lafayette and Ray Counties, and the Southwestern district, chiefly embraced in Vernon, Barton and Bates Counties. The coal found in the last named district is 'practically an extension of the Cherokee seam of Kansas.

COAL PRODUCTION OF MONTANA

Montana's coal history goes back to 1880, when the United States Census figures showed an output of 224 tons, but it was not until 1889 that the tonnage began to assume any real importance: in that year 363,301 tons were mined. By 1895, the production exceeded 1,500,000 tons, but it was not until 1907 that

the 2,000,000-ton mark was passed; in the intervening years the production had ranged from 1,358,919 tons in 1904 to 1,852,291 tons in 1906. In 1918 all records were broken when an output of 4,532,505 tons was reached.

Production by years since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	1,920,190	1912.....	3,048,495	1916.....	3,632,527
1909.....	2,553,940	1913.....	3,240,973	1917.....	4,226,689
1910.....	2,920,970	1914.....	2,805,173	1918.....	4,532,505
1911.....	2,976,358	1915.....	2,789,755	1919.....	*3,300,000

*Estimated.

County production figures since 1913 have been as follows:

County	1913	1914	1915	1916	1917	1918
Carbon	1,304,524	1,212,941	1,172,721	1,534,267	1,790,270	1,647,705
Cascade	912,634	664,423	619,745	773,113	1,024,907	1,272,916
Fergus	5,348	23,104	68,362	232,681	†	†
Hill	9,405	16,256	14,117	14,600	†	9,165
Park	21,126	21,472	.....	.....	†	†
Musselshell	963,068	850,040	887,021	1,042,007	1,054,021	1,223,091
Other counties	23,968	16,937	27,789	35,859	†357,491	†379,628
Total, net tons	3,240,173	2,805,173	2,789,755	3,632,527	4,226,689	4,532,505

†Included under "other counties."

†Includes Blaine, Chouteau, Fergus, Hill (in 1917 only), Missoula, Richland, Sheridan and Valley Counties and small mines.

NEW MEXICO

The tonnage in the years named has been as below:

Year	Tons	Year	Tons	Year	Tons
1908.....	2,467,937	1912.....	3,536,824	1916.....	3,793,011
1909.....	2,801,128	1913.....	3,708,806	1917.....	4,000,527
1910.....	3,508,321	1914.....	3,877,689	1918.....	4,023,239
1911.....	3,148,158	1915.....	3,817,940	1919.....	*3,170,000

*Estimated.

Production by counties:

County	1913	1914	1915	1916	1917	1918
Colfax	2,749,765	3,015,363	2,866,442	2,837,613	3,114,604	3,029,221
McKinley	824,762	706,731	785,490	735,600	665,298	770,543
Santa Fe	67,852	145,574	145,574	208,617	†208,292	†207,534
Other counties	66,427	10,021	8,802	11,181	12,333	15,941
Total	3,708,806	3,877,689	3,817,940	3,793,011	4,000,527	4,023,239

†Includes Lincoln and Socorro County tonnages.

The first record of coal production in New Mexico is that contained in the initial issue of the volume *Mineral Resources of the United States*, which covered the calendar year 1882. In that year the reported output was 157,092 tons.

The output for year ending October 31, 1919, according to State Mine Inspector W. W. Risdon consisted of 2,470,310 tons of bituminous; 747,871 tons of semi-bituminous, and 53,948 tons of anthracite, a total of 3,272,129 tons.

About one-sixth of the total coal production is made into coke, the exact amount of coal so used being 555,218 tons in 1919. The tonnage of coke produced for year ending October 31, 1919, was 290,079. For the year ended October 31, 1918, the coal used for coking was 1,126,935 tons and the coke tonnage produced was 607,241.

THE COAL TRADE OF OKLAHOMA

The tonnage of coal mined in Oklahoma in recent years has been as follows:

Year	Tons	Year	Tons	Year	Tons
1911.....	3,074,242	1914.....	3,988,613	1917.....	4,386,844
1912.....	3,675,418	1915.....	3,693,580	1918.....	4,813,447
1913.....	4,165,770	1916.....	3,608,011	1919.....	*3,200,000

*Estimated.

Production by counties in recent years has been:

County	1913	1914	1915	1916	1917	1918
Coal	889,299	676,292	556,479	524,954	581,770	542,254
Haskell and Latimer	738,679	666,274	740,869	810,504	†841,262	919,487
Le Flore	201,853	264,023	256,642	266,162	285,239	331,374
Okmulgee	820,659	905,128	869,244	852,206	1,051,748	1,282,139
Pittsburg	1,429,350	1,373,771	1,132,272	977,043	1,279,063	1,364,207
Rogers and Wagoner	31,067	29,568	20,943	**	**	**
Tulsa	52,300	68,792	96,160	59,730	73,137	**
Other counties	2,563	4,765	20,971	117,412	274,625	373,986
Total	4,165,770	3,988,613	3,693,580	3,608,011	4,386,844	4,813,447

†Haskell tonnage included under "other counties."

*Included under "other counties."

A serious obstacle to the more rapid development of the state's coal resources has been the growing use of oil and gas in the state, as well as in neighboring states to which Oklahoma coal is shipped. While a portion of the oil and gas trade is new business, arising from the rapid increase in population and manufacture in the Southwest, coal tonnage has in some cities been decreased by reason of the use of other fuels.

THE PRODUCTION OF COAL IN OREGON

The tonnage output in the years named has been as below:

Year	Tons	Year	Tons	Year	Tons
1907.....	70,981	1911.....	46,661	1915.....	39,231
1908.....	86,259	1912.....	41,637	1916.....	42,592
1909.....	87,276	1913.....	46,063	1917.....	28,237
1910.....	67,533	1914.....	51,558	1918.....	*35,000

*Estimated; 1919 tonnages have not been separately reported.

The output of coal in this state does not amount to much, as the above figures show.

LIGNITE PRODUCTION IN SOUTH DAKOTA

There has doubtless been some lignite produced in South Dakota for a number of years, and mining has been carried on in a small way by settlers in the northwestern portion of the state where there are small areas underlain at shallow depths by workable deposits of lignite; but the total quantity produced annually has not been large. The first reports of production of lignite in South Dakota obtained by the United States Geological Survey are for the years 1913, 1914, 1915, 1916 and 1917, and show 10,540 tons, 11,850 tons, 10,593 tons, 8,886 tons and 8,042 tons, respectively. Tonnages for 1918 and 1919 have not, as yet, been separately reported.

Under ordinary circumstances lignite will not stand shipment for any great distance, and consequently any increase or decrease in production depends almost entirely upon local needs. The greater part of the output is taken from strip pits and small drift mines and is used by ranchers living in the northwestern

part of the state at greater or less distances from railroads. The possibilities of the greater utilization of the lignite deposits of the country are now engaging the serious attention of fuel experts. Their value as a gas-producer fuel has already been demonstrated and manufacture of lignite briquets upon a commercial scale was started in the sister state of North Dakota a few years ago.

COAL PRODUCTION OF TENNESSEE

Tennessee coal production in 1919 was the lowest since 1904. Under normal conditions only a comparatively small proportion of the total output is shipped outside of the state because of the competition of adjacent producing areas. The railroads are the heaviest consumers of Tennessee coal, taking approximately 40 per cent. of the tonnage mined. About 60 per cent. of the Tennessee product that finds a market in other states goes to the South and the Southeast; Indiana, Kentucky, Michigan, Ohio and Texas, Illinois, Missouri, Minnesota and Wisconsin take care of the rest of the outside shipments, which, as a whole, represent about 46 per cent. of the production. The best known coal of the state is the "Jellico," mined in northeastern Tennessee; this enjoys a substantial trade in the South as a domestic fuel.

The tonnage mined since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	6,199,171	1912.....	6,473,228	1916.....	6,137,449
1909.....	6,358,645	1913.....	6,860,184	1917.....	6,194,221
1910.....	7,121,380	1914.....	5,943,258	1918.....	6,831,048
1911.....	6,433,156	1915.....	5,730,361	1919.....	*5,150,000

*Estimated.

Production by counties since 1913 has been as follows:

County	1913	1914	1915	1916	1917	1918
Anderson	659,345	579,619	510,522	511,923	418,588	619,381
Campbell	1,779,338	1,675,521	1,663,708	1,508,912	1,288,049	1,367,448
Claiborne	1,456,468	1,371,052	1,141,142	1,550,290	1,265,639	1,345,914
Fentress .....	.....	.....	.....	300,681	434,035	474,331
Grundy	319,736	229,995	305,812	335,145	421,749	432,623
Hamilton	366,545	246,085	*	*	*	*
Marion	677,505	538,165	479,134	561,488	588,545	490,771
Morgan	497,484	371,797	371,406	349,447	545,480	645,344
Overton	86,165	75,900	*	*	124,742	227,392
Rhea	109,413	43,436	*	*	*	*
Roane	162,732	167,885	*	*	*	*
Scott	146,083	75,174	*	65,104	116,728	152,703
White	347,878	288,291	*	*	*	*
Other counties and small mines	251,492	280,338	998,650	954,559	990,696	1,075,141
Total	6,860,184	5,943,258	5,730,361	6,137,449	6,194,221	6,831,048
Coke output	364,578	264,127	256,973	382,175	411,326	427,106

*Included in other counties.

TEXAS

The tonnage in the years named has been as below:

Year	Tons	Year	Tons	Year	Tons
1908.....	1,895,377	1910.....	1,892,176	1912.....	2,188,612
1909.....	1,824,440	1911.....	1,974,593	1913.....	2,429,144

Year	Tons	Year	Tons	Year	Tons
1914.....	2,323,773	1916.....	1,987,503	1918.....	2,261,135
1915.....	2,088,908	1917.....	2,355,815	1919.....	*1,600,000

*Estimated.

The latest United States Geological Survey reports show lignite operations in ten and bituminous in six counties, but do not give individual county production. The tonnages are as follows:

Quality	1913	1914	1915	1916	1917	1918
Bituminous	1,247,988	1,218,160	1,197,792	1,025,093	1,259,276	1,074,183
Lignite	1,181,156	1,105,613	891,116	962,410	1,096,539	1,186,952

During 1919, bituminous coal was produced in Erath, Maverick, Palo Pinto, Webb, Wise and Young Counties; lignite in Bastrop, Henderson, Hopkins, Houston, Leon, Medina, Milam, Robertson, Titus and Wood Counties.

The proximity of the Oklahoma mines has long been a factor in retarding the development of the Texas coal fields. The records of coal production in Texas go back only to 1884, when about 125,000 tons was mined.

Estimates of the coal areas of Texas place the bituminous fields known to contain workable coal at 8,200 square miles, with 5,800 square miles of area not so well known but which may contain workable coal. The known lignite areas cover 2,000 square miles, while there are 53,000 square miles, extending from Sabine and Red Rivers on the east and north to the Rio Grande on the southwest which may contain workable beds of lignite.

COAL TONNAGE OF UTAH

Utah is growing as a coal producer, largely on account of the development of transportation and mining interests in Rocky Mountain territory. The railroads are very large consumers, and the smelters and other works appertaining to gold and silver mines call for considerable tonnage.

The tonnage in the years named has been:

Year	Tons	Year	Tons	Year	Tons
1908.....	1,846,792	1912.....	3,016,149	1916.....	3,567,428
1909.....	2,266,899	1913.....	3,254,828	1917.....	4,125,230
1910.....	2,517,809	1914.....	3,103,036	1918.....	5,136,825
1911.....	2,513,175	1915.....	3,108,715	1919.....	*4,629,722

*Estimated: State Mine Inspector.

Coke production in the fiscal year ended November 30, 1918, was 738,302 tons; in 1917 it was 372,782 tons; in 1916 it was 424,924 tons.

Production of coal by counties in recent calendar years has been:

County	1913	1914	1915	1916	1917	1918
Carbon	2,830,102	2,669,511	2,671,055	3,182,244	3,701,891	4,607,192
Emery	314,915	357,768	390,080	339,931	†377,727	†453,172
Summit and Uinta	108,027	73,025	42,677	41,857	38,140	67,641
Small mines	1,784	2,732	4,903	3,396	7,472	8,820
Total	3,254,828	3,103,036	3,108,715	3,567,428	4,125,230	5,136,825

†Includes Grand County tonnage.

The development and growth of the industry in this state is shown also in the following tabulation furnished by the United States Geological Survey:

Year	Shipments	Local	At Mines	For Coke	Total
1910.....	2,129,452	26,207	94,345	267,805	2,517,809
1911.....	2,004,892	28,797	98,790	381,696	2,513,175
1912.....	2,528,513	36,509	106,401	344,726	3,016,149
1913.....	3,527,110	46,635	110,896	570,187	3,254,828
1914.....	2,355,687	43,199	100,739	603,411	3,103,036

THE COAL TRADE

Year	Shipments	Local	At Mines	For Coke	Total
1915.....	2,302,800	47,224	104,304	654,387	3,108,715
1916.....	2,686,880	65,260	78,435	736,853	3,567,428
1917.....	3,292,758	77,028	86,128	669,316	4,125,230
1918.....	4,238,718	64,827	94,978	738,302	5,136,825

VIRGINIA PRODUCTION AND COAL FIELDS

Although the Old Dominion State shares pioneer honors with Maryland, its production and coal fields have been overshadowed by the rapid growth of the tonnage of West Virginia. With greater railroad development in the coal fields, however, has come a more rapid, if modest expansion, so that, within the last decade, the output has more than doubled. Production since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	4,259,042	1912.....	7,846,638	1916.....	9,707,474
1909.....	4,752,217	1913.....	8,828,068	1917.....	10,087,091
1910.....	6,507,997	1914.....	7,959,535	1918.....	10,289,808
1911.....	6,864,667	1915.....	8,122,596	1919.....	*9,500,000

* Estimated.

Commercial exploitation of the coal resources of Virginia began early in the last century. What is said to have been the first systematic mining in the United States was carried on at that time in the Richmond, or Henrico, County, region. In 1822, the production from this field, 54,000 tons, was twelve times the shipments made in the same year from the Pennsylvania anthracite regions. The Richmond field touched its zenith in 1833, when an output of 142,587 tons was reached. From that time, it began to dwindle and since 1913 commercial production in Henrico County has been dead.

While the production in the Henrico field has an historic interest, the real importance of the state as a coal producer dates from 1884. In the year preceding the Pocahontas-Flat Top coal region was opened up by the extension of the Norfolk & Western Ry. to that portion of the state. The Pocahontas field extends over parts of Tazewell, Russell, Buchanan, Dickenson, Wise and Scott Counties. The largest operations were formerly in Tazewell County, and until 1892 practically all of the product was from this county. In 1892, however, the Wise County deposits were opened up by the extension through them of the Clinch Valley division of the Norfolk & Western Ry. Coal and coke of Wise and Lee Counties obtain easy access to the market at Cincinnati, Louisville and points beyond, and in the southern and western trade this product is very well regarded.

The extreme southwestern portion of the state is being developed at a rapid pace by operations on the line of the Louisville & Nashville and the Southern system, as well as by new operations of the Clinchfield Coal Corporation at the extreme southerly end of the Clinch Valley. This coal has an outlet via the Carolina, Clinchfield & Ohio Ry.

The utilization of the Virginia output in recent years has been as follows:

Year	Shipped	Local	At mines	For coke	Total
1911.....	5,230,894	82,349	181,660	1,369,764	6,864,667
1912.....	6,027,712	107,657	182,870	1,528,399	7,846,638
1913.....	6,615,481	83,432	175,792	1,953,363	8,828,068
1914.....	6,438,133	84,349	144,930	1,292,123	7,959,535
1915.....	6,948,235	82,210	135,799	956,352	8,122,596
1916.....	7,513,641	156,730	113,376	1,923,727	9,707,474
1917.....	7,733,626	173,535	145,231	2,034,699	10,087,091
1918.....	8,188,502	392,712	107,519	1,601,075	10,289,808

As showing the growth of the tonnage from the several counties the statement below is of interest:

County	1913	1914	1915	1916	1917	1918
Tazewell	1,447,351	1,323,530	1,647,081	1,588,044	1,631,849	1,624,736
Wise	5,103,559	4,620,702	4,186,309	5,228,945	5,427,455	5,514,132
Lee, Russell, etc. ...	2,277,158	2,015,303	2,289,206	2,890,485	3,027,787	3,150,940

During 1919 the Interstate R.R. originated 1,675,131 tons of coal in Virginia; the Norfolk & Western, 1,960,019 tons; the Southern handled 2,663,281 tons (including business originating and passing through).

COAL MINED IN WASHINGTON

The tonnage of the State of Washington has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908	2,977,490	1912	3,346,946	1916	3,019,600
1909	3,590,639	1913	3,831,647	1917	4,002,759
1910	3,979,569	1914	3,040,361	1918	4,128,424
1911	3,548,322	1915	2,409,331	1919	3,059,580

The production by counties, in net tons, in recent years was as follows:

County	1914	1915	1916	1917	1918	1919
King	1,042,607	844,966	889,275	1,314,366	1,331,601	952,632
Kittitas	1,237,564	879,062	1,316,993	1,741,237	1,739,379	1,922,534
Lewis	87,558	78,259	109,121	130,578	174,621	126,493
Pierce	553,841	488,693	533,162	606,049	600,917	397,641
Skagit .....	.....	.....	.....	1,000	5,897	3,820
Thurston	112,189	112,096	165,066	204,688	271,406	212,730
Whatcom ...	6,602	6,255	5,983	4,841	4,603	42,886
Totals ...	3,040,361	2,409,331	3,019,600	4,002,759	4,128,424	*3,059,580

*Includes 844 tons from Stevens County. Figures furnished through courtesy of James Bagley, state mine inspector.

Of the three Pacific states, Washington is the only one producing a large amount of coal. Coal fields in this state are conveniently located with regard to the chief centers of population, and while the coal is of fair quality, there is nevertheless the opportunity for the importation of coal from the adjacent Canadian Province of British Columbia. This coal finds a market in Seattle and Tacoma and the vicinity thereof, but naturally can not meet competition with rail freight to the interior, save in the case of that going all-rail to Spokane. The superiority of the British Columbia coal is also a factor tending to restrict the shipment of Washington coal to San Francisco, for, despite greater length of voyage, British Columbia coal is delivered in San Francisco in greater volume every year than is the coal from Washington.

COAL PRODUCTION OF WYOMING

In the past decade the coal production of Wyoming has grown from 5,489,902 tons to 7,100,000 tons. In view of the geographical location of the state and its present stage of development, it is only natural that the railroads should be the largest consumers of coal mined in Wyoming, but, with the growth of transportation facilities, the market for Wyoming coal has expanded in other directions. Recent consolidations of important producing interests under well-known management are expected to further augment the competitive force of Wyoming production. Under normal conditions, coal from the Wyoming fields is shipped into 14 different states. The tonnage so distributed represents over 25 per cent. of the output. The railroads take approximately 65 per cent. of the coal mined.

THE COAL TRADE

Production since 1908 has been as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	5,489,902	1912.....	7,368,124	1916.....	7,910,647
1909.....	6,393,109	1913.....	7,393,066	1917.....	8,575,619
1910.....	7,533,088	1914.....	6,475,293	1918.....	9,438,688
1911.....	6,744,864	1915.....	6,554,028	1919.....	*7,100,000

*Estimated.

County production during the past six years is shown in the next table.

County	1913	1914	1915	1916	1917	1918
Carbon	615,430	630,841	669,652	790,813	908,726	797,641
Converse	7,111	8,095	*	*	*	**367,115
Hot Springs	*	*	†497,601	†644,435	†771,565	†789,432
Lincoln	1,871,461	1,482,421	1,416,301	1,888,709	1,940,813	1,912,897
Sheridan	1,211,167	1,001,411	978,623	1,314,063	1,673,419	1,917,076
Sweetwater	2,832,475	2,509,371	2,632,244	2,901,220	2,920,119	3,651,238
Uinta	67,065	53,777	†	†	†	†
Weston	353,656	349,415	*	*	*	††
Other counties and small mines	434,702	439,962	359,607	371,407	360,977	3,289
Total	7,393,066	6,475,293	6,554,028	7,910,647	8,575,619	9,438,688

*Included under other counties.

†Includes Fremont and Park Counties.

††Included with Carbon County figures.

**Johnson and Weston Counties.

††Included under Converse County.

BITUMINOUS PRODUCTION BY DISTRICTS

Statistics of production published by the Geological Survey have hitherto been given by States and counties, a grouping which although capable of exact definition, is often less significant than the producing districts recognized by the industry. The following table apportions the 1917 and 1918 output by producing fields. It is recognized that some of the districts shown, such as Illinois and Central Pennsylvania, may be further subdivided. The grouping, however, conforms to trade usage and is practically that established by the Fuel Administration.

PRODUCTION OF BITUMINOUS COAL IN THE UNITED STATES BY DISTRICTS, IN 1917 AND 1918. (a)

District	1917	1918
Central Pennsylvania.....	59,044,000	61,629,000
Northern Pennsylvania.....	7,381,000	8,051,000
Pittsburgh, Pennsylvania, and Panhandle of W. Virginia.....	50,588,000	51,554,000
Westmoreland, Latrobe, Greensburg, and Ligonier.....	16,879,000	17,701,000
Connellsville	34,597,000	35,677,000
Somerset and Cumberland-Piedmont.....	13,843,000	14,267,000
Fairmont, West Virginia.....	17,568,000	20,104,000
Northern Ohio.....	26,849,000	30,287,000
Michigan	1,375,000	1,465,000
Southern Ohio.....	14,098,000	15,768,000
Northeastern Kentucky.....	6,454,000	7,109,000
Hazard, Kentucky.....	1,835,000	2,364,000
Kanawha and Kenova-Thacker.....	27,864,000	30,655,000
New River, West Virginia.....	15,096,000	14,448,000
Pocahontas and Tug River.....	24,947,000	23,128,000
Southwestern Virginia.....	8,604,000	9,041,000
Southeastern Kentucky.....	6,381,000	8,083,000

District	1917	1918
Tennessee and Georgia.....	6,313,000	6,989,000
Alabama.....	20,068,000	19,185,000
Western Kentucky.....	10,249,000	10,833,000
Indiana.....	26,539,000	30,679,000
Illinois.....	86,199,000	89,291,000
Iowa.....	8,966,000	8,192,000
Missouri.....	5,671,000	5,668,000
Kansas.....	7,185,000	7,562,000
Arkansas.....	2,144,000	2,227,000
Oklahoma.....	4,387,000	4,813,000
Texas.....	2,356,000	2,261,000
North Dakota.....	791,000	720,000
Montana and Northern Wyoming.....	7,029,000	7,606,000
Colorado.....	12,483,000	12,408,000
Utah and Southern Wyoming.....	9,899,000	11,502,000
New Mexico.....	4,001,000	4,023,000
Washington.....	4,010,000	4,082,000
	551,693,000	579,281,000

(a) Does not include production in Alaska, California, Idaho, North Carolina, Oregon, and South Dakota.

BEECH CREEK DIVISION COAL SHIPMENTS

Shipments of bituminous coal from the central Pennsylvania region over the Beech Creek Division of the New York Central during the calendar year 1919 decreased 1,918,122 tons, or 19.3 per cent., compared with tonnage carried during 1918:

Month	1915	1916	1917	1918	1919
January.....	925,656	1,144,186	1,111,889	738,043	758,871
February.....	768,659	1,135,659	868,459	764,878	462,818
March.....	835,524	1,122,881	1,107,841	961,086	280,351
April.....	739,748	836,406	909,293	823,320	585,410
May.....	808,973	799,987	953,862	814,538	630,072
June.....	794,167	832,045	916,274	772,158	692,654
July.....	841,036	883,443	888,061	830,374	750,064
August.....	908,524	952,964	973,452	917,410	763,934
September.....	940,491	885,882	885,312	902,125	793,921
October.....	1,043,314	983,524	1,069,731	920,237	1,501,994
November.....	1,121,859	1,013,954	899,042	698,314	175,658
December.....	1,136,252	927,893	795,512	680,849	522,374
Total.....	10,864,203	11,518,824	11,378,233	9,823,332	7,918,122

CAROLINA, CLINCHFIELD & OHIO RY. TONNAGE

During 1916, 1917 and 1918 shipments of coal over the Carolina, Clinchfield & Ohio Ry. by months were:

Month	1917	1918	1919	Month	1917	1918	1919
January...	269,181	212,211	328,107	August....	247,392	219,936	326,959
February..	212,375	269,472	272,558	September..	220,906	282,325	371,680
March.....	236,303	239,709	258,225	October...	226,036	279,441	300,629
April.....	230,407	213,103	243,040	November..	208,719	251,581	367,404
May.....	237,403	224,765	265,597	December..	195,735	278,133	369,979
June.....	235,208	236,207	324,405	Total...	2,721,487	2,946,869	3,777,502
July.....	191,824	239,986	348,919				

The tonnage carried during 1919 increased 830,633 tons, or 28.1 per cent., compared with the preceding year.

CHESAPEAKE & OHIO RY. SHIPMENTS

Commercial shipments of bituminous coal, by months, over the Chesapeake & Ohio System, compared with same months of last few years, in net tons, were:

Month	1914	1915	1916	1917	1918	1919
January	1,644,152	1,866,164	2,426,637	2,348,220	1,603,125	1,981,187
February	1,150,576	1,550,690	2,202,861	1,921,966	2,085,548	1,324,830
March	1,596,093	1,608,554	2,580,559	2,359,379	2,304,475	1,573,291
April	1,637,214	1,841,354	2,324,796	2,208,288	2,181,941	1,742,823
May	1,821,011	2,071,918	2,801,725	2,471,932	2,409,451	2,193,779
June	1,822,962	2,177,703	2,535,128	2,475,838	2,428,697	2,468,837
July	1,800,351	2,206,686	2,410,473	2,458,506	2,497,842	2,662,928
August	2,104,217	2,394,621	2,494,729	2,598,893	2,735,562	1,929,536
September ...	2,003,765	2,332,556	2,345,099	2,369,412	2,411,628	2,518,451
October	2,026,604	2,348,373	2,405,733	2,442,298	2,548,279	2,548,180
November ...	1,555,489	2,326,675	2,328,019	2,183,870	1,995,468	1,626,914
December ...	1,501,086	2,311,329	2,184,508	2,169,537	2,015,224	2,254,175
Total	20,663,520	25,036,623	29,040,267	28,008,139	27,217,240	24,824,931

Coke tonnage for the same years follows:

Month	1914	1915	1916	1917	1918	1919
January	34,256	11,437	46,521	47,360	45,593	61,762
February	36,194	14,309	41,352	40,297	44,690	58,400
March	40,658	18,373	48,178	43,457	46,100	51,702
April	36,215	21,421	51,319	41,132	48,083	31,305
May	31,040	21,803	48,245	46,060	36,970	34,890
June	29,392	22,701	40,351	41,035	35,261	48,405
July	25,033	21,960	35,752	34,271	41,590	54,295
August	21,181	25,010	43,614	37,322	32,176	53,450
September ...	13,439	30,366	43,069	43,069	43,005	60,325
October	8,713	33,983	55,121	46,285	63,588	60,829
November ...	11,304	38,491	50,157	41,890	44,738	51,371
December ...	11,207	44,130	46,484	46,187	60,524	48,025
Total	298,643	303,984	550,163	501,340	542,318	614,759

The coal tonnage of the Chesapeake & Ohio Ry. for the calendar years named was as follows, in net tons:

Destination	Coal			Coke	
	1917	1918	1919	1918	1919
To tidewater	5,396,288	5,589,438	3,743,020	.....	.....
Other points and roads east.	3,022,336	3,347,773	2,883,656	227,945	139,298
Other points and roads west.	15,540,865	16,554,693	14,949,078	239,414	399,616
From connections	1,756,287	1,725,336	2,249,177	74,959	75,845
Grand total, net tons...	25,715,776	27,217,240	24,824,931	542,318	614,759
Origin					
From New River district ..	7,131,640	6,868,406	6,336,797	213,277	159,651
From Kanawha district ...	14,516,749	16,193,725	13,845,151	34,857	8,669
From Kentucky district ...	2,310,341	2,403,441	2,393,806	219,225	370,594
From connections	1,757,046	1,751,668	2,249,177	74,959	75,845
Total, all sources	25,715,776	27,217,240	24,824,931	542,318	614,759
Company fuel	2,292,363	2,178,175	1,965,872	.....	.....
Grand total	28,008,139	29,395,415	26,790,803	542,318	614,759

Anthracite tonnage is nominal and is not included in coal from connections.

Compared with 1918, bituminous shipments over this road last year decreased 2,604,612 tons or 8.8 per cent. Coke shipments increased 72,441 tons or 13.3 per cent.

BUFFALO, ROCHESTER & PITTSBURGH RY. SHIPMENTS

Shipments in net tons of revenue and non-revenue bituminous coal and coke over the Buffalo, Rochester & Pittsburgh Ry. during 1919 and the three years preceding were as follows:

Month	Coal				Coke			
	1916	1917	1918	1919	1916	1917	1918	1919
Jan. ...	954,756	881,154	824,319	839,885	49,836	40,963	32,300	69,986
Feb. ...	907,872	684,083	865,782	523,973	47,155	34,543	35,954	47,787
Mar. ...	904,989	971,337	1,133,596	572,637	53,167	35,138	47,550	44,872
Apr. ...	700,704	835,949	1,025,151	354,716	46,671	33,679	41,750	30,100
May ...	731,537	955,056	1,005,916	418,432	48,289	47,913	40,576	33,235
June ...	749,964	990,084	1,060,890	436,650	47,602	40,369	44,501	30,455
July ...	800,393	898,946	1,061,390	600,996	36,518	37,679	41,892	29,879
Aug. ...	924,738	998,488	1,089,438	739,066	44,103	40,784	34,628	22,675
Sept. ...	924,645	921,974	973,363	800,781	41,852	36,175	42,788	27,420
Oct.	872,874	1,054,511	906,581	932,285	37,914	33,715	52,307	12,862
Nov. ...	838,738	981,575	754,638	220,929	43,751	34,663	48,042	23,171
Dec. ...	883,278	895,354	957,532	425,326	40,263	33,966	71,805	31,869
Total 10,194,488	11,068,511	11,658,596	6,860,068*	537,122	449,587	534,093	404,311	

* Revised total to care for corrections not indicated by monthly figures.

Bituminous tonnage hauled during the calendar year 1919 decreased 4,798,528 tons, or 41.1 per cent., compared with the year previous. Coke shipments dropped 129,782 tons, or 32.09 per cent.

The figures given cover both tonnages originated and those received from connections.

BALTIMORE & OHIO R.R. SHIPMENTS

Bituminous coal shipments over the Baltimore & Ohio since 1915 have been as follows:

Month	1915	1916	1917	1918	1919
January	2,368,615	3,027,656	3,152,049	3,043,682	2,974,990
February	2,134,955	2,985,928	2,644,712	3,613,091	2,292,546
March	2,345,960	3,094,745	3,193,928	4,081,395	2,414,897
April	2,419,104	2,811,411	3,053,593	4,032,604	2,531,252
May	2,872,216	3,323,132	3,365,224	4,375,152	3,620,602
June	3,230,034	3,288,129	2,344,161	4,638,464	3,857,747
July	3,234,468	3,360,831	3,508,242	5,112,641	4,082,391
August	3,370,111	3,358,765	3,412,441	5,217,213	4,036,790
September	3,400,384	3,243,205	3,803,402	5,068,267	4,390,095
October	3,499,247	3,334,747	4,018,265	4,938,688	4,993,684
November	3,213,601	3,229,536	3,832,145	4,215,725	2,390,272
December	3,142,499	3,079,960	3,260,593	3,735,991	3,167,658
Totals	25,231,194	38,138,045	39,588,755	52,072,913	40,752,924

The figures given include coal from connecting lines, but no company tonnage.

THE COAL TRADE

Shipments of bituminous coal over this road during the calendar year 1919 decreased 11,319,998 tons, or 21.7 per cent., compared with 1918.

Coke shipments were:

Month	1915	1916	1917	1918	1919
January	221,395	382,692	290,986	213,250	197,508
February	232,111	378,461	203,766	225,258	140,339
March	257,099	400,518	318,194	272,725	138,503
April	289,369	355,268	309,823	319,236	109,634
May	297,897	357,106	293,454	349,713	102,034
June	329,130	352,092	311,210	312,094	133,060
July	344,557	335,094	316,557	290,772	158,635
August	345,358	350,101	295,917	219,126	187,526
September	331,224	352,629	297,060	243,729	169,387
October	368,257	371,537	288,980	253,260	148,825
November	375,014	353,780	272,638	208,145	203,754
December	377,511	309,791	231,032	202,822	198,525
Total	3,868,922	4,309,169	3,429,617	3,115,130	1,887,730

These figures, which include tonnage received from connecting lines, show a decrease of 1,227,400 tons, or 39.4 per cent. in 1919.

The B. & O. also hauls nearly 2,000,000 tons of anthracite; in 1916, the figures given in official reports were 1,905,888 tons; in 1917, 1,857,598 tons; in 1918, 1,905,888, and in 1919, 1,949,550 tons.

All statistics given in the above tables are in net tons.

WESTERN MARYLAND RY. COAL SHIPMENTS

Shipments of soft coal (in gross tons) over the Western Maryland Ry. during 12 months of 1919 and four previous years, are shown in the following table:

	1919			Total			
	W. Va. Div.	G.C.&C.	Total	1918	1917	1916	1915
January	219,091	37,283	256,374	324,505	381,072	284,693	280,655
February	129,292	20,384	149,676	336,805	298,688	257,429	224,125
March	155,512	16,916	172,428	440,031	385,166	237,399	251,459
April	182,515	18,394	200,909	360,681	345,190	261,973	205,601
May	429,432	25,244	454,676	439,197	392,894	280,465	238,181
June	257,943	19,944	277,887	461,008	394,573	278,667	232,725
July	314,669	30,183	344,852	406,464	424,313	281,237	254,196
August	350,458	32,376	382,834	382,718	415,028	298,137	260,815
September ...	348,135	37,895	386,030	367,171	380,663	287,129	283,227
October	393,422	41,228	434,650	236,974	446,978	340,459	287,121
November ...	154,934	17,869	172,803	274,620	447,151	350,151	315,464
December ...	244,747	17,738	262,485	305,073	373,844	284,931	273,786
Total	3,180,150	315,454	3,495,604	4,335,247	4,685,560	3,442,770	3,107,354

During 1919, the Erie R.R. handled a total bituminous coal tonnage of 7,600,000 tons, of which 350,000 tons originated at mines located on that system and 7,250,000 tons were received from connections.

COAL SHIPMENTS ON THE KANAWHA RIVER

Shipments by water in the calendar years from collieries below the Kanawha Falls are stated by the United States Engineer office for the Wheeling District as follows:

Year	Tons	Year	Tons	Year	Tons
1908.....	955,384	1912.....	1,276,660	1916.....	1,366,400
1909.....	1,065,680	1913.....	1,342,800	1917.....	1,428,900
1910.....	1,248,040	1914.....	1,052,560	1918.....	1,091,640
1911.....	1,346,140	1915.....	1,205,530	1919.....	741,900

Dam No. 11, Kanawha River, is located about one and one-half miles above the mouth of the stream.

COAL DUMPINGS AT VIRGINIA PIERS

Coal dumpings at the Virginia piers during the past two years are shown in the table following. Lamberts Point dumpings are by the Norfolk & Western Ry., Sewalls Point by the Virginian and Newport News by the Chesapeake & Ohio Ry.

Month	Lamberts Point		Newport News		Sewalls Point		Total	
	1918	1919	1918	1919	1918	1919	1918	1919
January ...	338,842	469,077	288,790	272,122	235,736	305,997	858,368	1,047,796
February ..	538,876	384,762	436,971	184,973	329,360	210,384	1,300,316	780,019
March	628,737	388,917	500,870	234,068	379,641	197,367	1,509,248	820,342
April	650,551	465,470	501,056	285,873	365,781	202,983	1,517,388	904,326
May	751,486	452,815	457,903	245,077	422,810	288,273	1,639,198	986,165
June	680,670	377,864	458,160	385,980	392,763	410,060	1,511,593	1,113,844
July	810,891	464,705	493,403	306,175	402,092	251,420	1,706,322	1,022,300
August	796,743	547,584	461,759	332,024	377,383	396,675	1,635,835	1,276,283
September ..	679,342	639,861	442,692	463,492	403,350	428,042	1,525,384	1,586,395
October	663,177	608,612	383,120	517,376	316,852	449,800	1,863,149	1,575,788
November ...	545,696	411,897	302,637	143,620	323,979	251,906	1,172,312	807,423
December ..	439,335	393,640	288,896	169,638	270,864	280,625	998,989	793,892
Total ..	7,419,346	5,605,204	5,011,255	3,420,363	4,220,557	3,618,482	16,631,002	12,653,987

Dumpings at the city piers in 1919 were as follows:

January	14,763	May	13,265	September	10,200
February	12,538	June	9,204	October	7,086
March	13,813	July	10,024	November	7,411
April	12,082	August	12,302	December	8,952
				Total	131,635

COOPERATION INVITED

In a work of the character of THE COAL TRADE, covering as it does thousands of figures on production and distribution, the possibility of errors creeping into the compilation and printing is practically inescapable. Every effort is made to have this work one hundred per cent. accurate, but the labor is human and, therefore, fallible. The editor and publisher would, therefore, greatly appreciate having any errors discovered by the reader brought to their attention. Inasmuch as the publication is designed to be of greatest benefit to those that use it, any suggestion as to the arrangement of the material in subsequent editions, the inclusion of new matter or the elimination of old will be welcomed.

SHIPMENTS OF COAL FROM LAKE ERIE PORTS

Shipments of cargo and bunker fuel from Lake Erie ports in 1919 were 6,637,850 net tons less than for the banner year of 1918, when the movement was 29,388,242 net tons. The total loadings reported by Ore and Coal Exchange at Cleveland for 1919 were 22,750,392 net tons. Detailed figures by ports, railroads and months are shown on the next page.

CARGO COAL

	Apr.	May	June	July	Aug.	Sept.	Oct.	† Nov. Season 1919
Toledo	272,810	706,572	744,105	681,563	573,868	491,968	462,978	386,694 4,276,148
Toledo	11,095	208,167	264,404	286,670	154,955	154,519	189,052	1,046 1,169,948
Toledo	11,897	330,872	610,346	594,663	375,844	363,608	341,698	192,396 2,392,513
Sandusky	56,219	266,878	321,497	197,063	204,992	166,448	151,191	163,645 1,407,268
Huron	104,511	292,186	301,847	244,828	121,830	117,812	127,212	86,659 1,487,640
Lorain	127,795	520,117	560,950	502,842	250,082	278,927	392,853	87,875 2,780,541
Cleveland	95,494	369,617	415,191	403,459	321,690	174,805	417,858	44,387 2,234,977
Cleveland	10,956	10,956	7,736	26,434	37,982	54,065	116,742	..... 806,977
Fairport	116,785	338,554	305,940	277,355	207,831	138,728	340,137	..... 1,667,048
Ashtabula	180,618	296,320	327,373	279,796	216,803	408,524	21,774	1,955,796
Conneaut	77,955	240,913	215,739	177,487	232,763	169,748	238,283	28,453 1,872,381
Erie	22,049	138,104	145,858	129,437	97,123	86,100	76,903	12,098 702,242
Erie	4,534	35,645	59,638	33,237	12,368	7,206	10,923	..... 163,301
Total	1,032,183	3,631,351	4,098,928	3,804,423	2,703,971	2,360,667	3,075,613	*956,505 21,713,341

FUEL COAL

	Apr.	May	June	July	Aug.	Sept.	Oct.	† Nov. Season 1919
Toledo	8,250	21,309	22,519	19,554	12,673	13,481	13,390	8,018 119,084
Toledo	346	5,890	7,143	8,582	4,952	4,826	2,856	..... 53,935
Toledo	240	5,053	11,510	13,949	7,439	7,027	5,234	..... 2,246 53,858
Sandusky	1,700	7,919	6,736	5,087	5,771	3,850	3,159	1,853 34,785
Huron	2,498	9,014	10,009	8,346	3,612	6,789	9,022	1,704 50,376
Lorain	6,195	28,529	35,398	29,099	15,119	18,011	21,926	7,982 150,909
Cleveland	15,551	44,998	37,844	36,907	29,609	34,840	37,077	14,307 249,693
Cleveland	.....	.....	2,631	633	1,175	1,309	.....	..... 9,304
Fairport	914	9,108	2,332	.....	.....	.....	.....	..... 12,364
Ashtabula	7,872	19,089	1,867	30,602	14,301	25,075	24,652	6,887 149,965
Ashtabula	5,637	10,727	13,806	16,136	10,902	19,943	21,084	2,697 100,982
Conneaut	337	682	836	1,737	2,247	1,869	2,575	715 10,898
Erie	1,821	6,138	6,096	6,717	6,666	6,917	7,680	1,487 48,392
Erie	119	1,980	2,777	2,399	2,053	2,443	1,410	3,295 16,446
Total	51,020	168,986	171,634	179,098	117,009	145,160	154,181	49,963 1,037,051

TOTAL CARGO AND FUEL.

	Apr.	May	June	July	Aug.	Sept.	Oct.	† Nov. Season 1919
Toledo	281,560	727,781	766,624	701,117	591,631	505,449	476,298	344,713 4,896,173
Toledo	11,441	213,857	261,547	265,252	159,907	150,345	130,458	1,046 1,193,833
Toledo	12,067	335,485	591,566	608,611	383,383	270,635	220,252	195,572 2,347,401
Sandusky	57,919	268,597	328,233	202,150	210,763	170,128	154,310	154,998 1,442,098
Huron	107,939	301,150	311,366	252,674	125,192	126,600	226,234	87,365 1,488,516
Lorain	132,920	548,646	586,788	531,941	265,901	296,938	414,779	2,871,450
Cleveland	111,025	407,215	453,075	439,666	351,889	209,145	454,435	58,694 2,484,644
Cleveland	.....	.....	73,235	27,067	39,157	55,374	121,048	..... 315,831
Fairport	914	20,064	8,668	.....	.....	.....	.....	..... 29,646
Ashtabula	124,457	357,593	327,307	307,957	232,435	163,803	364,719	48,745 1,817,013
Ashtabula	186,955	397,047	391,679	295,982	237,905	499,908	24,471	2,056,778
Conneaut	78,192	241,595	216,575	179,224	226,010	171,117	240,858	39,148 1,882,719
Erie	23,863	139,242	151,454	136,144	103,689	93,107	84,482	13,585 762,564
Erie	4,533	37,695	62,365	35,736	14,491	9,649	12,083	3,265 179,747
Total	1,132,203	3,800,337	4,270,462	3,982,521	2,920,850	2,605,537	3,239,794	1,006,493 29,750,392

*To close of season, December 10.

†Included in Cargo for November to end of Season of 1919 are following tonnages taken over and diverted by U. S. Railroad Fuel Administration, to Lake Michigan ports consigned to western railroads for locomotive fuel: Toledo—Hocking Valley, 133,371 tons; Baltimore & Ohio, 83,331 tons. Sandusky—Pennsylvania Co., 48,638 tons. Lorain—Baltimore & Ohio, 44,870 tons. Ashtabula—New York Central, 26,140 tons; Pennsylvania Co., 1,052, tons. Total 831,503 tons.

Detailed figures for the 1918 season appeared in the preceding edition of THE COAL TRADE, pp. 96-7.

An analysis of the 1919 figures by months and ports shows that the carriers got away to a good start in April, and for the first three months of the season shipments were in excess of 1918. June was the banner month of the season when 4,098,828 tons were transported northward. Then came the dock strikes, bringing a marked falling off.

The following table shows the bituminous coal shipments from each port for the 1919 and 1918 seasons:

Port—Railroad	1919 Cargo	Fuel	Total
Toledo—Hocking Valley	4,376,148	119,094	4,395,178
Toledo—Toledo & Ohio Central ..	1,159,908	33,995	1,193,833
Toledo—Baltimore & Ohio	2,293,523	53,888	2,347,401
Sandusky—Pennsylvania	1,407,263	34,765	1,442,028
Huron—Wheeling & Lake Erie....	1,437,640	50,876	1,488,516
Lorain—Baltimore & Ohio	2,720,541	150,909	2,871,450
Cleveland—Pennsylvania	2,334,951	249,693	2,484,644
Cleveland—Erie	865,977	9,904	815,881
Ashtabula—New York Central ..	1,667,048	149,965	1,817,013
Ashtabula—Pennsylvania	1,955,796	100,982	2,056,778
Fairport—Baltimore & Ohio	16,692	12,954	29,646
Conneaut—Bessemer & Lake Erie	1,322,321	10,898	1,333,219
Erie—Pennsylvania Lines West..	702,242	43,322	745,564
Erie—Pennsylvania R.R.	163,891	16,446	179,747
Totals	21,713,341	1,037,051	22,750,392

Port—Railroad	1918 Cargo	Fuel	Total
Toledo—Hocking Valley	4,991,658	144,130	5,135,788
Toledo—Toledo & Ohio Central ..	2,123,001	54,910	2,177,911
Toledo—Baltimore & Ohio	2,960,128	64,930	3,025,058
Sandusky—Pennsylvania Co.	2,389,150	59,107	2,448,257
Huron—Wheeling & Lake Erie ..	2,094,324	75,403	2,169,727
Lorain—Baltimore & Ohio	3,342,631	92,313	3,434,944
Cleveland—Pennsylvania Co.	2,547,479	292,898	2,840,377
Cleveland—Erie	670,322	32,314	692,136
Fairport—Baltimore & Ohio	271,148	46,436	317,584
Ashtabula—New York Central ..	1,954,276	211,312	2,165,588
Ashtabula—Pennsylvania Co.	1,451,089	32,371	1,533,460
Conneaut—Bessemer & Lake Erie	2,212,947	32,945	2,245,892
Erie—Pennsylvania	679,766	89,155	718,921
Erie—Pennsylvania R.R.	465,348	16,201	481,549
Totals	28,153,317	1,234,925	29,388,242

Loadings by ports and railroads for the past nine years are shown in the tabulations following. All figures are in net tons:

Port—Road	1911 Cargo	Fuel	1912 Cargo	Fuel	1913 Cargo	Fuel
Toledo:						
B. & O.	1,311,227	55,513	1,157,060	39,321	1,323,461	47,474
H. V.	2,254,936	94,709	2,328,978	90,522	2,677,061	79,945
Pa. Co.	13,532	13,532	13,541	13,541	15,346	15,346
T. & O. C.	1,080,361	5,481	1,028,810	9,191	1,455,245	46,522
W. & L. E.	1,970	398	398	1,006	1,006	1,006
Sandusky:						
B. & O.	77,720	4,497	84,257	4,889	42,392	3,660
Pa. Co.	1,734,335	50,766	1,990,343	65,425	2,539,278	78,946
Huron:						
W. & L. E.	985,200	34,963	1,453,503	55,788	1,740,333	64,299
Lorain:						
B. & O.	3,094,294	100,909	2,967,269	102,359	4,256,413	188,965
Cleveland:						
B. & O.	11,955	88,702	9,510	35,248	6,461	40,773
Erie	1,032,309	47,592	869,760	49,377	979,770	59,243
Pa. Co.	3,083,322	155,587	3,196,891	248,709	3,832,897	257,500

THE COAL TRADE

Port—Road	1911		1912		1913	
	Cargo	Fuel	Cargo	Fuel	Cargo	Fuel
Fairport:						
B. & O.	531,648	29,613	477,894	50,757	425,194	54,560
Ashtabula:						
N. Y. C.	2,114,370	131,710	1,819,597	139,374	2,076,340	166,754
Pa. Co.	3,172,831	161,727	2,688,874	163,788	2,788,938	161,537
Conneaut:						
B. & L. E.	142,466	129,158	449,472	179,230	858,755	161,905
Erie:						
Pa. Co.	498,069	96,475	812,317	104,621	875,903	103,025
Pa. R.R.						
Totals	21,627,003	1,180,933	21,309,733	1,358,140	26,880,847	1,480,458
Port—Road	1914		1915		1916	
	Cargo	Fuel	Cargo	Fuel	Cargo	Fuel
Toledo:						
B. & O.	2,006,823	57,928	1,738,918	53,494	1,880,687	53,629
H. V.	2,335,982	78,681	2,658,591	79,411	4,081,430	114,611
Pa. Co.		14,462		13,440		9,372
T. & O. C.	1,383,856	30,595	819,399	20,570	1,386,227	38,701
W. & L. E.				30,963		24,568
Sandusky:						
B. & O.	16,626	6,250	16,884	5,717	17,145	3,341
Pa. Co.	2,466,863	66,399	2,561,321	81,813	2,703,835	74,395
Huron:						
W. & L. E.	664,905	26,198	499,949	25,877	1,138,393	54,325
Lorain:						
B. & O.	2,466,219	79,003	2,868,705	165,069	2,460,335	205,664
Cleveland:						
B. & O.	6,513	33,554	3,693	26,468	1,665	24,877
Erie	711,586	34,930	789,323	25,766	470,296	23,566
Pa. Co.	2,369,274	135,486	1,826,300	224,187	2,387,622	266,174
Fairport:						
B. & O.	406,793	33,974	478,978	55,352	454,055	63,709
Ashtabula:						
N. Y. C.	1,870,798	115,040	2,184,311	172,706	2,152,866	237,167
Pa. Co.	3,250,884	128,733	2,975,416	147,511	2,476,463	150,558
Conneaut:						
B. & L. E.	394,997	147,501	1,233,883	223,593	1,476,857	218,761
Erie:						
Pa. Co.	1,131,793	96,970	850,303	116,656	654,565	107,533
Pa. R.R.						
Totals	21,333,617	1,140,759	21,507,374	1,461,593	24,692,936	1,680,956
Port—Road	1917		1918		1919	
	Cargo	Fuel	Cargo	Fuel	Cargo	Fuel
Toledo:						
B. & O.	2,722,139	65,735	2,960,128	64,930	2,293,513	53,888
H. V.	4,765,293	129,330	4,991,658	144,130	4,276,143	119,024
Pa. Co.		4,366		3,660		
T. & O. C.	2,405,908	66,956	2,123,001	54,910	1,159,903	33,925
W. & L. E.		30,610		32,911		22,525
Sandusky:						
B. & O.	18,397	5,849		5,261	12,036	34,669
Pa. Co.	3,475,455	82,356	2,889,150	59,107	1,407,233	34,765
Huron:						
W. & L. E.	1,322,429	71,841	2,094,324	75,403	1,437,640	50,376
Lorain:						
B. & O.	2,859,747	150,919	3,342,681	184,374	2,720,541	150,909
Cleveland:						
B. & O.	299	21,513		20,150		16,378
Erie	206,467	12,638	670,322	22,314	305,977	9,904
Pa. Co.	1,781,648	277,543	2,547,479	292,393	2,234,951	249,693
Fairport:						
B. & O.	255,073	55,718	271,148	46,436	16,692	12,954
Ashtabula:						
N. Y. C.	1,349,142	170,410	1,954,276	211,312	1,667,048	149,965
Pa. Co.	2,016,761	141,372	1,451,089	32,371	1,955,796	100,932
Conneaut:						
B. & L. E.	2,476,269	267,467	2,212,947	205,176	1,372,321	10,398

Erie:						
Pa. Co.	722,719	86,400	679,768	39,155	702,242	42,322
Pa. R.R.			465,348	16,201	163,801	16,446
Totals	26,828,756	1,641,523	28,153,817	*1,561,699	†21,725,377	†1,110,923

*Does not include 16,738 tons unpooled Kelly Island coal handled by B. & O. at Sandusky.

†Includes unpooled coal as follows: Toledo—Pa. Co., 8,660 tons; W. & L. E., 32,911. Sandusky—B. & O., 5,261. Lorain—B. & O., 92,561. Cleveland—B. & O., 20,150. Conneaut—B. & L. E., 172,231. Total, 226,774 tons.

†Includes tonnages taken over and diverted by U. S. Railroad Fuel Administration to Lake Michigan ports consigned to western railroads for locomotive fuel, as follows: Toledo—H. V., 123,371 tons; B. & O., 82,531. Sandusky—Pa. Co., 42,588. Lorain—B. & O., 44,870. Ashtabula—N. Y. C., 26,140; Pa. Co., 1,052. Total, 331,502 tons.

Tonnages for 1918 and 1919 cover coal as dumped over the machines of port roads.

RAIL SHIPMENTS OF OHIO COAL

The following tabulation shows the tonnages in recent years of several of the railroads transporting coal from Ohio mines to various destinations:

Railroads	1916	1917	1918	1919
Hocking Valley	3,527,047	5,539,045	6,161,598	3,768,335
Toledo & Ohio Central	1,551,258	2,868,579	2,916,279	2,313,146
Baltimore & Ohio	3,089,268	3,003,987	*4,387,442	*3,111,415
Wheeling & Lake Erie	3,362,310	3,442,566	4,271,601	3,232,795
Cleveland, Lorain & Wheeling...	3,843,397	4,025,850	4,670,417	3,954,340
Zanesville & Western	863,966	1,609,007	2,186,868	1,706,139
Pennsylvania Lines	7,470,873	8,232,948	9,035,148	6,176,852
Lake Shore & Mich. Southern..	1,356,373	1,838,164	2,246,002	1,319,671
Federal Valley †	131,645	200,000	104,571	97,803
Pittsburgh & West Virginia ‡ ...	303,314	643,683	1,319,903	571,555
Kanawha & Michigan	404,283	513,227	622,952	426,681
Detroit, Toledo & Ironton	210,594	292,864	478,157	201,904
Total, net tons	26,114,328	32,209,920	38,400,938	**26,891,323

* Includes all coal on B. & O. proper, B. & O. S.-W. and B. & O. Toledo division, formerly the C., H. & D.; figures prior to 1918 covered only B. & O. tonnage.

† Formerly Marietta, Columbus & Cleveland Ry.; 1917 tonnage estimated.

‡ Formerly known as the Wabash-Pittsburgh Terminal R.R.

** Includes 10,687 tons reported by Norfolk & Western Ry.

HUNTINGTON & BROAD TOP MOUNTAIN TONNAGES

Revenue bituminous tonnage handled over the Huntington & Broad Top Mountain R.R. during 1919 showed a decrease of over 26 per cent. as compared with the tonnage for the year preceding. The total reported for 1919 was 686,629 gross tons as compared with 993,607 gross tons in 1918; 1,509,421 tons in 1917 and 1,205,077 tons in 1916. The tonnage by months in 1919 was as follows:

January	70,766	May	57,363	September	91,249
February	36,302	June	58,026	October	95,172
March	42,793	July	78,735	November	11,676
April	43,379	August	88,868	December	12,300

BITUMINOUS TONNAGE ON INTERSTATE RAILROAD

Shipments of bituminous coal originating in the State of Virginia and handled over the line of the Interstate Railroad Co. last year were as follows:

Month	Tons	Month	Tons	Month	Tons
January	126,489	May	119,059	September	147,045
February	123,645	June	125,893	October	174,319
March	102,026	July	148,166	November	175,800
April	102,308	August	129,882	December	200,499
Total, 1919				1,675,131	

NORFOLK & WESTERN TONNAGE

The coal tonnage of the Norfolk & Western Ry. for three years specified was as below. All amounts are in net tons, and include shipments from all mines and connections:

	Tide			Line		
	1917	1918	1919	1917	1918	1919
Coal	5,430,806	8,187,778	6,425,260	26,993,496	21,370,711	21,133,229
Coke	18,457	6,593	3,680	2,529,627	2,360,254	1,133,640
Total	*5,449,263	*8,194,371	*6,428,940	*29,523,113	*23,730,965	*22,266,869

*Includes tonnage from other lines.

The shipments of coal over this line from the various districts during the years 1915, 1916, 1917, 1918 and 1919 were:

From	1915	1916	1917	1918	1919
Pocahontas field	16,249,808	17,997,927	16,794,475	16,108,358	15,580,542
Tug River field	3,879,898	3,985,520	3,632,289	3,345,204	3,128,533
Thacker field	2,957,453	3,242,262	3,163,725	2,969,283	2,583,780
Kenova field	1,042,037	1,024,257	1,040,207	1,086,260	932,756
Clinch Valley field	1,715,257	1,522,022	1,637,906	1,655,786	1,381,413
Other N. & W. territory	44,772	65,247	161,636	151,855	84,413
Total, N. & W. fields	25,885,863	27,836,605	26,430,239	25,316,746	23,691,437
Williamson & P. C. R.R.	984,702	1,309,896	1,599,173	2,106,262	1,660,221
Tug River & Ky. R.R.	268,714	636,800	609,287	644,973	664,731
Other roads	2,841,064	4,165,079	3,395,434	1,145,208	890,489
Grand total	29,695,394	33,949,380	32,034,133	29,213,189	26,906,898

N. & W. SHIPMENTS BY MONTHS

The following table shows the monthly coal shipments during the past six years:

Month	1914	1915	1916	1917	1918	1919
January	1,965,814	1,886,938	2,653,409	2,808,156	1,868,516	1,764,312
February	1,666,475	1,621,021	2,554,376	2,204,170	2,304,081	1,768,573
March	2,112,118	1,904,752	2,717,507	2,597,055	2,602,505	2,072,040
April	2,117,286	2,200,551	2,852,072	2,723,368	2,457,522	1,961,644
May	2,338,672	2,434,614	3,094,208	2,913,121	2,676,982	2,270,326
June	2,315,956	2,680,465	3,045,650	2,953,965	2,680,216	1,864,318
July	2,503,062	2,854,445	2,841,445	3,028,341	2,709,886	2,401,557
August	2,450,808	3,005,618	3,048,940	2,988,097	2,776,695	2,448,302
September	2,509,916	2,910,221	2,982,919	2,843,673	2,509,159	2,525,545
October	1,997,839	3,027,236	2,910,077	2,690,016	2,582,570	2,569,193
November	1,852,858	2,698,706	2,780,178	2,434,238	2,229,829	2,785,852
December	1,641,165	2,470,827	2,468,599	1,849,933	1,815,228	2,475,236
Total	25,471,969	29,695,394	33,949,380	32,034,133	29,213,189	26,906,898

Shipments during 12 months of 1919 decreased 2,306,291 tons, or 7.8 per cent., compared with tonnage carried during preceding year.

Back in 1907 the tonnage carried over this road amounted to 14,907,862 tons; while 22 years ago it was only 3,735,424 tons. This growth indicates how

favorably the coal from the famous Pocahontas region has become established among consumers.

Coke shipments in 1918 and 1919 were as follows:

	1918	1919		1918	1919
January	225,451	184,688	August	188,096	94,620
February	222,210	134,499	September	183,014	90,803
March	218,453	126,433	October	178,038	92,153
April	198,388	83,215	November	186,261	89,639
May	194,304	54,590	December	174,426	79,646
June	189,800	46,733	Totals	2,360,695	1,129,811
July	202,254	52,792			

Of the coal tonnage carried in 1919, 2,125,655 tons went foreign; 4,299,605 tons coastwise (including bunker) and 21,133,229 tons to line points and other domestic trade.

For the 12 months of 1919 tonnage for foreign shipments increased 732,722 tons, or 49 per cent., while the line point and other domestic decreased 237,482 tons, or 1.1 per cent. Coastwise, including bunker tonnage, on the other hand dropped 2,395,240 tons, or 35.4 per cent.

VIRGINIAN R.R. SHIPMENTS

The tonnages of bituminous coal (including company fuel) transported over the Virginian R.R. since January 1, 1913, to the close of 1919 in net tons were:

Month	1913	1914	1915	1916	1917	1918	1919
January	453,886	407,109	344,139	471,158	600,193	445,404	469,709
February	399,279	259,756	283,430	514,547	478,105	500,321	266,415
March	380,091	336,952	309,427	532,164	617,387	511,834	315,600
April	345,039	342,843	352,750	397,612	526,470	571,579	299,046
May	318,720	359,929	307,006	436,199	670,074	640,166	493,604
June	304,030	321,181	301,932	420,620	596,094	539,731	527,645
July	321,626	286,354	381,853	445,900	569,026	586,021	470,836
August	376,083	361,906	411,090	490,778	599,770	615,411	562,116
September	393,199	379,113	393,055	519,345	497,975	590,327	606,189
October	476,482	341,703	359,226	586,679	573,240	632,804	643,961
November	421,971	281,499	355,439	542,367	579,095	572,512	527,153
December	364,937	276,015	321,270	463,594	428,549	439,636	561,607
Total	4,555,331	3,954,360	4,120,617	5,820,984	6,736,980	6,645,746	5,743,881

TONNAGE HANDLED AT SOUTH AMBOY

Leadership in the volume of tonnage handled in New York harbor has been frequently claimed for the South Amboy wharves of the Pennsylvania R.R. system. The operations over these wharves since 1910 have been as follows:

Year	Bituminous Gross tons	Anthracite Gross tons	Total Coal	Coke Net tons
1910.....	3,073,221	1,763,173	4,836,394	9,722
1911.....	3,547,372	1,731,133	5,278,505	6,642
1912.....	3,562,810	888,239	4,451,049	10,297
1913.....	4,291,953	1,160,656	5,452,609	11,800
1914.....	3,657,520	1,466,773	5,124,293	13,815
1915.....	4,158,938	1,111,125	5,270,063	16,338
1916.....	4,197,494	1,022,054	5,219,548	16,048
1917.....	4,113,570	757,515	4,871,085	5,858
1918.....	4,983,811	658,912	5,642,723	3,048
1919.....	3,476,395	558,222	4,034,617	3,535

THE COAL TRADE

PENNSYLVANIA R.R. FUEL TRAFFIC

Bituminous	1914	1915	1916	1917	1918	1919
January	3,820,719	3,498,936	4,314,806	4,259,039	3,329,270	4,184,643
February	3,295,530	3,029,055	4,201,193	3,706,963	3,431,226	3,247,973
March	4,413,895	3,243,270	4,203,171	4,644,949	4,355,634	3,148,623
April	3,437,040	3,358,062	3,879,270	4,461,030	4,242,078	3,258,569
May	3,321,110	3,393,328	3,926,050	4,681,032	4,837,271	4,011,452
June	3,685,278	3,664,703	3,744,647	4,558,953	5,023,669	3,950,426
July	3,766,158	3,668,146	4,014,712	4,669,814	5,067,538	4,549,259
August	4,075,810	3,847,575	4,292,627	4,413,410	5,172,951	4,928,527
September ...	4,050,102	3,901,402	3,946,824	4,314,997	4,970,686	5,160,196
October	3,976,192	4,304,466	3,973,141	4,077,502	5,068,719	5,260,530
November ...	3,446,436	3,307,041	3,842,275	3,544,997	4,155,770	2,269,808
December ...	3,469,635	4,298,382	3,828,420	3,219,938	3,863,151	2,869,935
Total ...	44,756,905	44,506,366	48,167,136	50,552,619	53,517,963	46,839,941

Includes coal received from connecting lines, but no company coal.

Shipments of bituminous coal for the 12 months ended December 31, 1919, compared with 1918, decreased 6,678,022 tons or 16.2 per cent.

Coke	1914	1915	1916	1917	1918	1919
January	846,950	684,133	1,191,732	1,078,911	783,965	875,787
February	813,552	741,102	1,129,603	807,478	672,628	699,554
March	1,021,968	876,532	1,357,004	1,082,495	824,487	680,352
April	850,560	832,427	1,254,412	1,077,893	987,940	571,356
May	814,189	872,181	1,229,440	1,041,976	1,022,199	453,161
June	788,865	990,476	1,189,602	1,009,045	1,089,652	451,523
July	842,934	1,091,344	1,156,559	1,053,338	1,122,909	538,717
August	789,363	1,135,645	1,173,884	995,751	1,042,681	654,589
September ...	733,479	1,152,674	1,165,994	1,024,093	985,669	696,931
October	716,010	1,225,848	1,205,013	972,693	1,083,446	621,118
November ...	620,399	1,210,149	1,089,413	942,115	930,102	621,252
December ...	618,694	1,195,899	1,115,255	912,425	812,062	621,252
Total ...	9,496,312	12,018,404	14,257,911	11,988,213	11,357,740	7,513,176

Coke tonnage decreased 3,844,564 tons or 33.8 per cent.

Anthracite	1914	1915	1916	1917	1918	1919
January	893,453	886,233	1,136,878	982,249	996,242	914,690
February	692,278	771,173	971,580	878,870	999,516	562,983
March	1,069,704	814,872	1,120,060	1,121,117	1,104,891	578,514
April	1,050,365	1,126,690	766,540	782,163	989,820	766,810
May	1,012,367	972,995	957,091	944,341	980,729	867,294
June	842,513	843,053	907,892	958,286	948,181	799,017
July	680,491	653,020	906,509	895,121	1,026,358	876,316
August	795,492	743,257	1,001,198	874,030	1,041,856	920,235
September ...	983,442	783,307	1,062,119	776,481	928,329	918,816
October	1,047,340	1,084,739	1,156,699	925,016	871,861	1,019,206
November ...	1,003,988	1,194,794	1,048,292	840,200	735,276	844,710
December ...	980,275	1,195,899	962,106	956,585	933,638	997,097
Total ...	11,031,708	10,953,209	11,996,964	10,934,459	11,556,697	10,065,688

Total shipments of fuel, anthracite, bituminous and coke, over this road during 1919 amounted to 64,418,805, compared with 76,432,400 tons in 1918, a decrease of 12,013,595 tons or 15.7 per cent. All returns in net tons.

READING'S BITUMINOUS TONNAGE

Shipments of bituminous coal, paying revenue, over the Philadelphia & Reading Ry. during 1919 and five previous years, in gross tons were:

Month	1914	1915	1916	1917	1918	1919
January	1,530,088	1,295,959	1,717,182	1,684,202	1,400,157	1,485,158
February	1,259,151	1,137,983	1,696,357	1,327,151	1,362,702	1,202,084
March	1,661,769	1,405,337	1,718,270	1,790,199	1,940,511	1,141,463
April	1,170,550	1,298,169	1,560,834	1,853,137	1,880,287	1,345,075
May	1,101,288	1,349,795	1,442,493	1,723,640	1,540,880	1,592,768
June	1,230,022	1,395,226	1,359,288	1,755,998	2,140,440	1,538,397
July	1,274,944	1,415,515	1,514,195	1,778,024	2,122,620	2,118,877
August	1,349,816	1,521,727	1,609,012	1,645,642	1,995,289	2,352,233
September ...	1,347,439	1,488,197	1,515,580	1,782,684	1,832,143	2,561,378
October	1,355,519	1,601,044	1,626,156	1,711,458	1,866,753	2,982,529
November ...	1,181,162	1,674,507	1,559,744	1,703,231	1,735,194	1,112,823
December ...	1,280,646	1,828,889	1,445,670	1,462,974	1,462,974	1,389,150
Total ...	15,742,394	17,412,338	18,764,781	20,218,340	21,279,950	20,821,937

Shipments of bituminous coal during the calendar year 1919 decreased 458,013 tons, or 2.1 per cent.

None of this tonnage originates on the Reading, being turned over to the P. & R. by the New York Central, B. & O. and Western Maryland for the most part, at such points as Newberry Junction near Williamsport, Philadelphia and Shippensburg; the latter junction has been developed notably in recent years with the upbuilding of the Western Maryland line.

For some years past this road has carried more bituminous than anthracite.

PITTSBURGH, SHAWMUT & NORTHERN R.R. TONNAGE

Shipments of bituminous coal over the Pittsburgh, Shawmut & Northern R.R. (net tons) during the past six years, were:

Month	1914	1915	1916	1917	1918	1919
January	287,474	234,712	248,480	181,132	113,962	71,241
February	246,810	194,952	300,612	137,360	93,489	44,006
March	256,971	167,590	254,893	177,148	149,258	52,094
April	72,747	157,553	222,530	97,932	96,502	57,648
May	152,807	154,155	273,429	99,180	103,170	50,572
June	181,711	164,206	280,955	111,036	115,490	54,124
July	144,034	239,287	255,105	105,264	105,939	79,715
August	169,525	189,949	281,588	112,962	76,051	88,944
September	194,453	222,678	176,736	113,023	64,672	98,724
October	197,958	312,846	157,655	118,657	44,264	108,659
November	220,583	304,320	116,388	118,568	45,023	10,522
December	234,734	319,889	175,598	93,051	60,295	49,709
Total	2,359,807	2,662,637	2,743,431	1,457,583	1,068,115	765,958

Company coal and tonnage received from connecting lines is included in above shipments.

PITTSBURGH & LAKE ERIE R.R. SHIPMENTS

Shipments of bituminous coal and coke (including company fuel), by months, over the Pittsburgh & Lake Erie R.R. during 1919 and two years previous, were as follows:

THE COAL TRADE

Month	Coal			Coke		
	1917	1918	1919	1917	1918	1919
January	957,895	1,063,437	1,138,703	477,729	575,402	615,514
February	894,683	1,124,648	800,724	544,783	613,605	465,514
March	986,988	1,306,579	771,748	665,865	733,799	454,928
April	883,210	1,336,940	919,675	586,786	659,403	359,101
May	992,217	1,331,831	1,135,064	686,190	657,675	251,119
June	1,089,460	1,331,954	1,135,220	679,493	690,489	292,885
July	1,092,668	1,387,639	1,272,008	623,955	766,519	380,436
August	1,088,304	1,326,944	1,329,837	655,029	747,208	482,771
September	1,153,963	1,278,672	1,218,242	580,846	726,179	425,569
October	1,214,785	1,228,226	1,417,869	675,165	714,486	305,264
November	1,036,099	984,274	505,461	642,643	603,823	505,676
December	979,084	1,089,893	1,302,941	527,102	610,583	476,091
Total	12,418,799	14,841,038	12,947,592	7,417,319	8,099,171	5,014,586

Shipments of bituminous coal over the Pittsburgh & Lake Erie R.R. during 1919 decreased 1,893,446 tons, or 8.8 per cent., over the tonnage carried in 1918. Coke tonnage decreased 3,084,585 tons, or 38.08 per cent.

COAL TRAFFIC VIA POUGHKEEPSIE BRIDGE

Statistics covering the movement of coal and coke tonnage over the Poughkeepsie Bridge show a steady growth in the use of that route for shipping coal into New England, as well as continued gains in the coal traffic of the Central New England Ry.

Figures for the fiscal years 1905-15, inclusive, and the past four calendar years are as follows:

Year	Tons	Year	Tons	Year	Tons
1905.....	519,145	1910.....	2,113,952	1915.....	2,828,437
1906.....	768,812	1911.....	2,389,680	1916.....	3,421,153
1907.....	913,573	1912.....	2,768,696	1917.....	3,578,758
1908.....	969,655	1913.....	3,079,688	1918.....	3,822,671
1909.....	1,806,547	1914.....	2,856,317	1919.....	3,821,638

The most marked increase, 1909 over the fiscal year of 1908, followed the reconstruction of the bridge in 1907-8. As can be seen from the gain mentioned, 836,892 tons, the usefulness of the route was considerably augmented.

In 1916, the coal tonnage was divided as follows: Anthracite, 2,054,901; bituminous, 1,338,761; in 1917, anthracite, 2,067,506, and bituminous, 1,511,252, in 1918, anthracite, 2,387,765 and bituminous, 1,434,906, and in 1919, anthracite, 2,292,155 tons and bituminous, 1,529,483 tons. Of the 1919 tonnage, 2,017,063 tons of anthracite and 1,339,656 tons of bituminous moved to destinations on the New York, New Haven & Hartford proper, and 275,092 tons of anthracite and 189,827 tons of bituminous to Central New England Ry. destinations.

COAL CARRIED BY NEW ENGLAND ROADS

Commercial tonnage brought into New England by the Boston & Albany, Boston & Maine and New York, New Haven & Hartford railroads last year showed a decrease of 3,411,770 net tons over the figures for 1918.

The figures by roads for the two years were as follows:

Railroad	Anth.—Tons 1918	Bit.—Tons 1918	Total—Tons 1918
Boston & Albany	1,577,659	2,440,941	4,018,600
Boston & Maine	3,786,125	2,552,188	6,338,313
N. Y., N. H. & H.	3,872,713	3,752,457	7,625,170
Totals	9,236,497	8,745,586	17,982,083

Railroad	Anth.—Tons 1919	Bit.—Tons 1919	Total—Tons 1919
Boston & Albany	1,260,545	1,820,604	3,081,149
Boston & Maine	2,576,678	2,067,909	4,644,587
N. Y., N. H. & H.	3,197,512	3,647,065	6,844,577
Totals	7,034,735	7,535,578	14,570,313

After fifty-one years of successful service in the interests of the entire industry, the COAL TRADE JOURNAL is bigger and better than ever before. Dominated by no class or clique, it continues its mission of fighting for the rights of the trade in all of its branches. It is at once the oldest and youngest in the field.

COAL TRADE OF THE NEW YORK CANALS

The quantity of coal carried on the New York State canals is stated by the Superintendent of Public Works to have been as follows:

Tons, 2,000 lbs.	1913	1914	1915	1916	1917	1918	1919
Anthracite	258,039	234,823	227,089	163,647	169,107	100,705	82,788
Bituminous	136,899	117,971	92,240	49,747	65,834	44,086	9,128
Total	394,938	352,794	319,329	213,394	234,941	144,791	91,916

FUEL TRAFFIC OF THE NEW YORK CENTRAL R.R.

Commercial coke and coke tonnage handled by the New York Central railroad system east of Buffalo last year was 6,162,842 net tons, or approximately 21.3 per cent. less than in 1918. Detailed figures for the past six years show the following:

	1914	1915	1916	1917	1918	1919
Anthracite	5,838,111	5,678,101	6,203,842	6,670,215	6,933,427	6,984,435
Bituminous	12,606,856	13,537,538	16,971,522	20,188,407	21,264,681	15,260,319
Coke	665,153	869,390	843,923	842,632	645,916	436,428
Total	19,110,120	20,085,029	24,019,287	27,701,254	28,844,024	22,681,182

Since 1916, the tonnages handled by the New York & Ottawa R.R., now merged with the Central, are included in the N. Y. C. figures.

In addition to the commercial tonnage shown in the foregoing statement, the system handled 1,499,993 tons of company fuel as compared with 2,560,790 tons of supply bituminous in 1918.

TONNAGE, VALUE AND FREIGHT THROUGH "SOO" CANAL

Year	Total Value (Hard and Soft Coal)	Anthracite Per Ton	Bituminous Per Ton	Freight Per Ton	Total Coal
1887.....	\$4,735,454	*\$3.50	*\$3.50	\$0.90	1,352,987
1888.....	7,367,644	* 3.50	* 3.50	.70	2,105,041
1889.....	5,702,190	* 3.50	* 3.50	.47	1,629,997
1890.....	7,619,238	* 3.50	* 3.50	.45	2,176,925
1891.....	8,776,362	* 3.50	* 3.50	.43	2,507,532
1892.....	10,164,931	* 3.50	* 3.50	.41	2,904,266
1893.....	10,528,420	* 3.50	* 3.50	.40	3,008,120
1894.....	8,191,917	* 2.93	* 2.93	.40	2,797,184
1895.....	6,993,351	4.25	2.40	.37	2,574,362
1896.....	8,452,073	4.75	2.50	.32	3,023,340
1897.....	9,456,824	5.50	2.60	.30	3,039,172
1898.....	10,334,461	4.75	2.40	.25	3,776,450
1899.....	12,854,278	5.70	2.60	.46	3,940,887
1900.....	14,620,840	5.25	3.00	.44	4,486,977

THE COAL TRADE

Year	Total Value (Hard and Soft Coal)	Anthracite Per Ton	Bituminous Per Ton	Freight Per Ton	Total Coal
1901.....	15,492,226	5.60	2.90	.38	4,593,136
1902.....	16,570,398	6.25	3.25	.45	4,812,478
1903.....	24,898,407	5.80	3.15	.53	6,937,633
1904.....	19,657,221	5.50	2.60	.40	6,454,869
1905.....	20,706,302	5.60	2.75	.33	6,509,056
1906.....	25,136,044	5.75	2.50	.35	8,739,630
1907.....	34,461,584	5.80	2.60	.31	11,400,095
1908.....	28,868,837	5.47	2.50	.30	9,902,460
1909.....	29,044,855	5.47	2.50	.31	9,940,026
1910.....	41,392,801	5.30	2.75	.31	13,513,727
1911.....	48,552,057	5.85	2.75	.31	15,332,876
1912.....	49,303,871	6.00	2.85	.30	14,931,594
1913.....	58,927,341	5.85	2.70	.30	18,622,938
1914.....	46,173,087	5.85	2.70	.30	14,487,221
1915.....	42,359,320	5.80	2.70	.30	13,357,058
1916.....	55,916,681	6.10	3.05	.30	16,123,119
1917.....	99,271,727	6.50	5.25	.45	18,298,853
1918.....	94,964,144	8.00	4.90	.48	17,981,610
1919.....	74,079,978	8.85	4.60	.42½	13,874,951

*Average price for anthracite and bituminous coal combined.

COAL TRAFFIC THROUGH SAULT CANALS

The movement of coal through the Sault Ste. Marie canals last year, with comparative totals for the four preceding years, was as follows:

		ANTHRACITE				
						Total
Month, 1919	U. S. Canal	Can. Canal	1919	1918	1917	1916
April.....	142,864	.....	142,864	.....	90,292	100,800
May.....	248,263	.....	248,263	166,155	244,510	251,381
June.....	227,200	.....	227,200	268,947	327,146	264,377
July.....	344,462	.....	344,462	283,764	384,454	366,900
August.....	179,687	5,700	185,387	299,555	371,883	322,136
September.....	228,830	2,200	231,030	293,800	402,324	303,887
October.....	498,505	.....	498,505	403,510	357,639	279,350
November.....	466,135	.....	466,135	487,569	332,210	188,070
December.....	69,143	.....	69,143	57,750	51,741	133,318
Total, 1919....	2,405,089	7,900	2,412,989	2,211,050	2,562,199	2,210,219
“ 1918....	2,129,925	81,125	2,211,050			
“ 1917....	2,389,449	172,750	2,562,199			
“ 1916....	2,122,509	87,710	2,210,219			
“ 1915....	1,072,597	58,133	2,030,730			
“ 1914....	1,906,418	333,987	2,240,505			

BITUMINOUS

						Total
Month, 1919	U. S. Canal	Can. Canal	1919	1918	1917	1916
April.....	415,824	.....	415,824	88,078	160,318	505,598
May.....	2,213,190	.....	2,239,738	1,877,973	1,204,117	2,075,552
June.....	2,211,284	55,700	2,266,984	1,649,028	1,796,418	1,791,047
July.....	1,943,115	94,150	2,037,265	2,121,603	1,998,222	2,360,962
August.....	1,147,258	42,300	1,189,558	2,517,603	2,547,969	2,424,491
September.....	1,112,691	44,150	1,156,841	2,796,577	3,061,490	1,872,078

Month, 1919	U. S. Canal	Can. Canal	Total			
			1919	1918	1917	1916
October	1,836,036	12,475	1,848,511	3,193,378	2,586,849	1,457,717
November	307,241	.....	307,241	1,517,020	1,885,586	1,021,060
December .....	.....	.....	.....	9,300	495,685	403,945
Total, 1919...	11,186,639	275,323	11,461,962	15,770,560	15,736,654	13,912,500
" 1918...	14,397,089	873,471	15,770,560			
" 1917...	14,648,567	1,088,087	15,736,654			
" 1916...	12,970,073	942,827	13,912,900			
" 1915...	10,910,080	416,248	11,326,328			
" 1914...	10,240,259	2,006,457	12,246,715			

Compared to 1918, the bituminous movement declined 4,308,598 net tons, while anthracite increased 201,939 net tons.

The United States Canal was opened April 10 and closed December 15; the Canadian opened April 12 and closed December 15.

Shipments through this channel during a term of years have been as follows:

Year	Tons	Year	Tons	Year	Tons
1906.....	8,739,255	1910.....	13,513,727	1914.....	14,487,221
1907.....	11,400,095	1911.....	15,332,876	1915.....	13,357,058
1908.....	9,902,460	1912.....	14,931,594	1916.....	16,123,119
1909.....	9,940,026	1913.....	18,622,938	1917.....	18,298,853

The coal areas of the world in square miles, says an authority, are as follows: United States, 192,000; British America, 18,000; Great Britain, 12,000; Spain, 4,000; France, 2,000; Germany, 1,800; Belgium, 518; rest of Europe, 100,000; China, 2,000; Japan, 5,000.

Receipts of coal by water at Bangor, Me., during the last four years have been as follows: 1919, 188,302 gross tons; 1918, 264,359 gross tons; 1917, 257,000 gross tons; 1916, 329,000 gross tons. Of the 1919 receipts, bituminous accounted for 142,157 gross tons and anthracite for 46,145 gross tons. In addition 537 gross tons of coke were received by water.

FREIGHT RATES TO NEW YORK

Coal freight rates from the Pennsylvania and West Virginia bituminous fields to Upper New York Harbor (including Harsimus, Greenville, Port Liberty and Communipaw) remained stationary until June 25, 1918, when they were affected by the general rate increase authorized by Order No. 28 of the United States Railroad Administration. The charges in effect per gross ton before and after that date were as follows:

District	From	
	Jan. 1 to June 24, 1918	June 25 to Dec. 31, 1918
Clearfield	\$1.65	\$2.20
Northern West Virginia	1.65	2.20
Fairmont	1.90	2.45
Latrobe	1.65	2.20
Snow Shoe	1.65	2.20
Greensburg	1.75	2.30
Reynoldsville	1.65	2.20
Westmoreland	1.90	2.45
Pittsburgh	2.05	2.60

Rates to the lower ports, including South Amboy, Port Reading, Elizabethport, St. George and Arlington, are five cents per gross ton less than the rates quoted to the upper ports.

Up to the early part of April, 1918, the rates on anthracite to the upper and lower ports were \$1.40 and \$1.45 per ton on domestic sizes and \$1.30 and \$1.35 per ton on pea and sizes smaller, the higher rates applying to the upper or North River ports in the harbor. During April, 1918, the rates to the lower ports were advanced to \$1.55 per gross ton on prepared sizes and \$1.45 per gross ton on pea and sizes smaller. A second advance, effective June 25, brought the rates to \$1.85 on prepared and \$1.75 per gross ton on pea and smaller sizes, with the usual differentials to the upper ports.

BITUMINOUS COAL FREIGHT RATES

Freight rates from representative producing states and districts to a number of leading coal consuming and distributing points are shown in the tabulations following. Unless otherwise specified, these rates are per net ton.

RATES FROM PENNSYLVANIA DISTRICTS

Rates *per gross ton* in effect January 1, 1920, from the Pittsburgh, Connellsville, Westmoreland, Greensburg and Latrobe districts were as follows:

To	Originating District			
	Pittsburgh	Connellsville- Westmoreland	Greensburg	Latrobe
Baltimore, Md.	\$2.60	\$2.45	\$2.30	\$2.20
Chester, Pa.	2.70	2.55	2.40	2.30
Harrisburg, Pa.	2.20	2.05	1.90	1.80
* Johnstown, Pa.	1.30	....	....	....
Lebanon, Pa., P. R.R. and P. & R..	2.50	2.35	2.20	2.10
New York, N. Y. (37th Street)....	2.80	2.65	2.50	2.40
New York, N. Y. (Brooklyn).....	2.90	2.75	2.60	2.50
Philadelphia	2.60	2.45	2.30	2.20
Sparrows Point	2.60	2.45	2.30	2.20
Steelton, Pa.	2.20	2.05	1.90	1.80
South Bethlehem, Pa.	2.70	2.55	2.40	2.30
Syracuse, N. Y.	2.70	2.55	2.40	2.30
To ATLANTIC PORTS via P. R.R.				
Greenwich, local	2.35	2.20	2.05	1.95
Greenwich, export	2.20	2.05	1.90	1.80
South Amboy, f. o. b. vessels ..	2.55	2.40	2.35	2.15
Harsimus Cove	2.60	2.45	2.30	2.20
Greenville	2.60	2.45	2.30	2.20
Canton, Baltimore, local	2.35	2.20	2.05	1.95
Canton, Baltimore, export	2.13	1.98	1.83	1.73
To ATLANTIC PORTS via B. & O.				
St. George coal piers	2.80	2.65		
St. George for export	2.55	2.40		
Philadelphia coal piers	2.35	2.20		
Philadelphia for export	2.20	2.05		
Curtis Bay piers	2.35	2.20		
Curtis Bay for export	2.13	1.98		

*The rate from points on the Monongahela Ry. in the Fairmont group south of the Pennsylvania state line to Johnstown is \$1.40 net ton. Rates to Johnstown from Greensburg and Latrobe groups apply specifically from point of origin to destination.

The Connellsville rate applies to shipments from points on the Southwest Branch of the Pennsylvania R.R. south of Ruffsdales; from points on the Pittsburgh, Virginia & Charleston and points on the Monongahela River R.R.

The Fairmont (Connellsville) rate on shipments via the Baltimore & Ohio applies to shipments from points east of Sutersville, Pa.; from points on the Smithfield & Masontown Branch and from the Fairmont region of West Virginia.

Rates *per net ton* to western points were as follows:

To	Originating District		
	Pittsburgh Group	Upper Connsv.	Lower Connsv.
Canton, Ohio	\$1.35	\$1.41	\$1.50
Chicago, Ill.	2.45	2.45	2.45
Cleveland, Ohio	1.45	1.51	1.60
Columbus, Ohio	1.50	1.60	1.70
Detroit, Mich.	2.05	2.05	2.05
Indiana Harbor, Ind.	2.45	2.45	2.45
Toledo, Ohio	1.90	1.90	1.90
Youngstown, Ohio	1.05	1.13	1.30
Lake ports	1.30	1.30	1.30

These rates apply in a general way to shipments from the territory described. There are, however, numerous extensions to the specific rates quoted and in each case before applying the rate as a basis for freight charges the shipper or consignee should determine the exact location of the mine from which the business will move, then refer to the tariff naming the rate in question.

The Pittsburgh district includes points east as far as Latrobe and south on the Southwest Branch to and including Ruffsedale; south to and including Brownsville and Braznell on the Pittsburgh, Virginia & Charleston R.R.; eastward to Dawson on the Baltimore & Ohio R.R., and eastward to Dickerson Run and southwest to and including Brownsville on the New York Central Lines.

The Connellsville district includes points on the Southwest Branch of the Pennsylvania R.R. south of Ruffsedale; on the Pittsburgh, Virginia & Charleston except Braznell and all Monongahela River R.R. points; New York Central points east of Dickerson Run, including Connellsville Transfer, and points on the Baltimore & Ohio, Dawson to Point Marion, Pa.

RATES FROM WEST VIRGINIA DISTRICTS

Rates in effect *per net ton*, unless otherwise noted, from the smokeless and splint fields of West Virginia, are shown in the following summaries:

To	Norfolk & Western Groups		
	Pocahontas and Tug River Dists.	Thacker Dist.	Kenova Dist.
Brunswick, Ga.	\$3.40	\$3.50	\$3.60
Charleston, S. C.	2.70	2.80	2.90
Jacksonville, Fla.	3.40	3.50	3.60
Norfolk, Va.	2.10	2.20	2.30
Southport, N. C.	3.00	3.10	3.20
Savannah, Ga.	3.00	3.10	3.20
Wilmington, N. C.	2.60	2.70	2.80
Norfolk and Lamberts Point— (For beyond the Capes) 2.00*		2.10*	2.20*
Richmond, Va.	2.10	2.20	2.30
Petersburg, Va.	2.10	2.20	2.30
Suffolk, Va.	2.10	2.20	2.30
Charlotte, N. C.	2.90	3.00	3.10
Raleigh, N. C.	2.80	2.90	3.00
Durham, N. C.	2.80	2.90	3.00
Columbia, S. C.	3.00	3.10	3.20
Waycross, Ga.	3.50	3.60	3.70
Augusta, Ga.	3.00	3.10	3.20

*Gross ton.

To	Originating Dist.			Originating Dist.	
	Pocahontas and Tug Riv. Dists.	Thacker and Kenova Dists.		Pocahontas and Tug Riv. Dists.	Thacker and Kenova Dists.
Akron, O. (Penna. Co. delivery only)	\$2.10	\$1.90	Mackinaw City, Mich. (via G. R. & I. bey'd)	\$2.60	\$2.45
Ashtabula, O.	2.60	2.40	Manitowoc, Wis. (prop.)	3.00	2.80
Bay City, Mich.	2.80	2.60	Manitowoc, Wis. (bey'd)	2.60	2.45
Canton, O. (P. R.R. and B. & O. delivery only) ..	2.10	1.90	Milwaukee, Wis. (G. T. beyond)	2.60	2.45
Cairo, Ill.	3.10	2.90	Milwaukee, Wis. (P. M. beyond)	2.60	2.45
Chicago, Ill.	2.60	2.45	Muncie, Ind.	2.40	2.25
Cincinnati, O.	1.60	1.50	Muskegon, Mich.	2.80	2.60
Cleveland, O.	2.10	1.90	Portsmouth, O.	1.40	1.10
Columbus, O.	1.70	1.50	Peoria, Ill.	2.80	2.65
Dayton, O.	1.80	1.70	Saginaw, Mich.	2.80	2.60
Detroit, Mich.	2.25	2.05	Sandusky, O.	2.10	1.90
Fort Wayne, Ind.	2.50	2.30	Sandusky (lake cargo) ..	1.70	1.55
Frankfort, Mich.	3.00	2.80	Springfield, O.	1.90	1.70
Grand Rapids, Mich. ...	2.80	2.60	Terre Haute, Ind.	2.60	2.45
Indianapolis, Ind.	2.10	2.00	Toledo, O.	2.10	1.90
Jackson, Mich.	2.35	2.15	Toledo, O. (lake cargo) ..	1.70	1.55
Kalamazoo, Mich.	2.65	2.45	Urbana, O.	2.10	1.90
Kewaunee, Wis. (proper) ..	3.00	2.80	Union City, Ind.	2.20	2.05
Kewaunee, Wis. (bey'd) ..	2.60	2.45	Vincennes, Ind.	2.60	2.45
Lansing, Mich.	2.50	2.30	Wyandotte, Mich.	2.25	2.05
Lima, O.	2.10	1.90	Xenia, O.	1.80	1.70
Mackinaw City, Mich. (proper)	3.30	3.10	Ypsilanti, Mich.	2.35	2.15

Rates *per gross ton* from the Fairmont (B. & O.) region to eastern points are as follows:

To		South Amboy, f. o. b. vessels ..	\$2.65
Baltimore, Md.	\$2.45	Harsimus Cove, P. R.R.	2.45
Chester, Pa.	2.45	Greenville	2.65
Harrisburg, Pa.	2.35	Canton, Baltimore, local	2.45
Johnstown, Pa.	1.10	Canton, Baltimore, export	1.98
Lebanon, Pa.	2.35	To ATLANTIC PORTS	
New York, N. Y. (Brooklyn) ..	2.75	St. George coal piers	2.65
Philadelphia	2.45	St. George for export	2.40
Sparrows Point	2.45	Philadelphia coal piers	2.45
Steelton, Pa.	2.05	Philadelphia for export	2.05
South Bethlehem, Pa.	2.55	Curtis Bay piers	2.45
Greenwich, local	2.95	Curtis Bay for export	1.98
Greenwich, export, P. R.R.	2.05		

To western points the rates quoted are on the *net ton* basis:

To		Lima, O.	\$1.90
Akron, O. (Moundsville Dist.) ..	\$1.45	Mackinaw City, Mich. (proper) ..	3.10
Ashtabula, O.	1.60	Mackinaw City, Mich. (beyond) ..	2.45
Bay City, Mich.	2.60		

Canton, O.	1.50	Manitowoc, Wis. (proper)	2.80
(Moundsville Dist.)	1.45	Manitowoc, Wis. (beyond)	2.45
Cairo, Ill.	2.95	Milwaukee, Wis. (beyond)	2.45
Chicago, Ill.	2.45	Muncie, Ind.	2.25
Cincinnati, O.	1.50	Muskegon, Mich.	2.60
Cleveland, O.	1.60	Portsmouth, O.	1.20
(Moundsville Dist.)	1.45	Peoria, Ill.	2.65
Columbus, O.	1.50	Saginaw, Mich.	2.60
Dayton, O.	1.70	Sandusky, O.	1.90
Detroit, Mich.	2.05	Springfield, O.	1.70
Ft. Wayne, Ind.	2.30	Terre Haute, Ind.	2.45
Frankfort, Mich.	2.80	Urbana, O.	1.90
Grand Rapids, Mich.	2.60	Union City, Ind.	2.05
Indianapolis, Ind.	2.20	Vincennes, Ind.	2.45
Jackson, Mich.	2.15	Wyandotte, Mich.	2.05
Kalamazoo, Mich.	2.45	Xenia, O.	1.75
Kewaunee, Wis. (proper)	2.80	Ypsilanti, Mich.	2.15
Kewaunee, Wis. (beyond)	2.45	Zanesville, O.	1.80
Lansing, Mich.	2.30		

RATES FROM C. & O. MINES

Rates from mines on the C. & O. and short line connections in West Virginia and Kentucky are shown in the tables following:

To	Originating District		
	New River, Group 1	Kanawha Dist. Groups 2 & 3	Kenova Dist. Groups 4 & 5
Brunswick, Ga.	\$3.40	\$3.50	\$3.15†
Charleston, S. C.	2.70	2.80	2.90†
Jacksonville, Fla.	3.40	3.50	3.55†
Norfolk, Va.	2.10	2.20	2.40
Newport News, Va. (proper) ..	2.10	2.20	2.40
Southport, N. C.	3.00	3.10	3.40†
Savannah, Ga.	3.00	3.10	3.00†
Wilmington, N. C.	2.60	2.70	3.00†
Newport News, Va. (For beyond the Capes) ..	2.00*	2.10*	....
Richmond, Va.	2.10	2.20	2.40
Petersburg, Va.	2.10	2.20	....
Suffolk, Va.	2.10	2.20	....
Charlotte, N. C.	2.90	3.00	3.10†
Raleigh, N. C.	2.80	2.90	3.40†
Durham, N. C.	2.80	2.90	....
Columbia, S. C.	3.00	3.10	3.15†
Augusta, Ga.	3.00	3.10	3.15†
Waycross, Ga.	3.50	3.60	3.45†
Akron, O. (Erie del'y only) ..	2.20	2.10	2.10
Akron, O. (P. R.R. del'y) ..	2.10	1.90	1.90
Ashtabula, O.	2.60	2.40	2.40
Bay City, Mich.	2.80	2.60	2.60

THE COAL TRADE

To	Originating District		
	New River, Group 1	Kanawha Dist. Groups 2 & 3	Kenova Dist.† Groups 4 & 5
Canton, O. (B. & O. or P. R.R. delivery)	2.10	1.90	1.90
Cairo, Ill.	3.10	2.95	2.95
Chicago, Ill.	2.60	2.45	2.45
Cincinnati, Ohio ††	1.60	1.50	1.50
Cleveland, O. (C. C. C. & St. L., B. & O. or P. R.R. del'y) ..	2.10	1.90	1.90
Cleveland (Erie delivery) ..	2.50	2.40	2.40
Cleveland (W.&L.E. del'y) ..	2.30	2.20	2.20
Columbus O. (C. & O., H. V. and N. & W. del'y) ..	1.70	1.50	1.50
Columbus, O. (C. C. C. & St. L. delivery)	1.90	1.70	1.70
Dayton, O.	1.80	1.70	1.70
Detroit, Mich.	2.25	2.05	2.05
Fort Wayne, Ind.	2.50	2.30	2.30
Frankfort, Mich.	3.00	2.80	2.80
Grand Rapids, Mich.	2.80	2.60	2.60
Indianapolis, Ind.	2.10	2.00	2.00
Jackson, Mich.	2.35	2.15	2.15
Kalamazoo, Mich.	2.65	2.45	2.45
Kewaunee, Wis. (proper) ..	3.00	2.80	2.80
Kewaunee, Wis. (beyond) ..	2.60	2.45	2.45
Lansing, Mich.	2.50	2.30	2.30
Lima, O.	2.10	1.90	1.90
Mackinaw City, Mich. (proper)	3.30	3.10	3.10
Mackinaw City, Mich. (via G. R. & I. beyond) ..	2.60	2.45	2.45
Mackinaw City, Mich. (via M. C. beyond)	3.30	3.10	3.10
Manitowoc, Wis. (proper) ..	3.00	2.80	2.80
Manitowoc, Wis. (beyond) ..	2.60	2.45	2.45
Milwaukee (beyond)	2.60	2.45	2.45
Muncie, Ind.	2.40	2.25	2.25
Muskegon, Mich.	2.80	2.60	2.60
Portsmouth, O.	1.50	1.20	1.20
Peoria, Ill.	2.80	2.65	2.65
Saginaw, Mich.	2.80	2.60	2.60

*Gross tons.

†From Big Sandy division, Long Fork and S. V. & E. Stations via Elkhorn City only.

††From Kentucky District Group 4, stations—Catlettsburg to Riverton and Seaton to Carey, Ky.. \$1.30 net ton.

RATES FROM KENTUCKY DISTRICTS

The next table shows rates in effect from mines in the Hazard and Harlan districts on the Louisville & Nashville R.R. in Kentucky.

To	Originating Dist. Harlan Hazard		To	Originating Dist. Harlan Hazard	
Akron, O. (Erie and N. O. deliveries)	\$2.05	\$2.05	Mackinaw City, Mich. (proper)	\$3.10	\$3.10
Ashtabula, O.	2.15	2.15	Mackinaw City, Mich. (via G. R. & I. beyond) ..	2.45	2.45
Bay City, Mich.	2.60	2.60			

To	Originating Dist.		To	Originating Dist.	
	Harlan	Hazard		Harlan	Hazard
Canton, O. (B. & O. de-livery only)	2.65	2.65	Manitowoc, Wis. (prop.)	2.80	2.80
Cairo, Ill.	2.75	2.75	Wanitowoc, Wis. (bey'd)	2.45	2.45
Chicago, Ill.	2.45	2.45	Milwaukee, Wis. (G. T. beyond)	2.45	2.45
Cleveland, O. (C. C. C. & St. L. only)	1.90	1.90	Milwaukee, Wis. (P. M. beyond)	2.50	2.50
Columbus, O. (C. C. C. & St. L. only)	1.75	1.75	Muncie, Ind.	2.25	2.25
Dayton, O.	1.75	1.75	Muskegon, Mich.	2.60	2.60
Detroit, Mich.	2.00	2.00	Peoria, Ill.	2.55	2.55
Fort Wayne, Ind.	2.30	2.30	Saginaw, Mich.	2.60	2.60
Frankfort, Mich.	2.80	2.80	Sandusky, O.	1.85	1.90
Grand Rapids, Mich.	2.60	2.60	Springfield, O.	1.70	1.70
Indianapolis, Ind.	2.05	2.05	Terre Haute, Ind.	2.45	2.45
Jackson, Mich.	2.20	2.20	Toledo, O.	1.90	1.90
Kalamazoo, Mich.	2.50	2.50	Urbana, O.	1.90	1.90
Kewaunee, Wis. (proper)	2.80	2.80	Union City, Ind.	2.05	2.05
Kewaunee, Wis. (bey'd)	2.45	2.45	Vincennes, Ind.	2.45	2.45
Lansing, Mich.	2.40	2.40	Wyandotte, Mich.	2.00	2.00
Lima, O. (B. & O.)	1.90	1.90	Xenia, O.	1.70	1.70
			Ypsilanti, Mich.	2.20	2.20

RATES FROM ILLINOIS-INDIANA DISTRICTS

The key-rate in the Illinois-Indiana rate structure is that in effect from the northern Illinois district to Chicago.

Effective	From Groups					
	1	2	3	4	5	6
October, 1917.....	\$0.93	\$0.94	\$0.75	\$1.01	\$1.01	\$1.17
June, 1918.....	1.28	1.30	1.12	1.36	1.36	1.52
October, 1918.....	1.23	1.25	1.07	1.31	1.31	1.47
Current rates.....	1.23	1.24	1.05	1.31	1.31	1.47

Effective	From Groups					
	7	8	9	10	11	12
October, 1917.....	\$1.17	\$1.25	†\$0.97	†\$1.07	†\$1.14	†\$1.17
June, 1918.....	1.52	1.60	1.32	1.42	1.49	1.52
October, 1918.....	1.47	1.55	1.27	1.37	1.44	1.47
Current rates.....	1.47	1.55	1.27	1.37	1.44	1.47

GROUPS

ILLINOIS
 1—Danville
 2—Fulton-Peoria
 3—Northern Ill.
 4—Springfield

5—Centralia
 6—Du Quoin
 7—Belleville
 8—Southern Illinois

INDIANA
 9—Clinton-Brazil
 10—Sullivan-Linton
 11—Princeton
 12—Booneville

†Effective July, 1917.

The rates shown from the Illinois mines are intrastate charges; interstate rates are the same, however, with the following exceptions: Northern Illinois, \$1.07; Danville, \$1.24; Springfield, \$1.32.

RULES ON BITUMINOUS CAR DISTRIBUTION

Present rules on car distribution to bituminous mines show a number of changes from the uniform regulations promulgated by the United States Railroad Administration effective October 10, 1918, and published in the 46th annual edition of THE COAL TRADE (page 113). The most important modification, effective April 16, 1920, is in Rule 8 (Rule 6 of the original regulations) affecting

assigned cars. The original rule read: "Private cars and such cars as are assigned to mines by the Car Service Section, United States Railroad Administration, will be designated as 'assigned cars. All other cars will be designated as 'unassigned' cars."

Other changes include the elimination of the limitation that the regulations applied "during periods of car shortage," extension from three to six months in the development rating provision, with permission to work two shifts (section h), provision for penalizing operators who "persistently" fail to make daily reports, prohibition against grouping of mines or pooling cars as between mines and minor changes in phraseology and amendments with respect to furnishing reports and giving the same publicity.

The rules in full, based upon CS-31 of the car service section of the United States Railroad Administration, and recommended by the Interstate Commerce Commission for continued application when the roads were returned to private ownership, with the change in Rule 8, are as follows:

Rules for Rating for Car Distribution Purposes Coal Mines (Other than Anthracite) Loading Coal at Mine Tipples.

"The following rules shall govern the rating of coal mines (other than anthracite) as the basis for the distribution of empty cars to such mines.

"a. The daily capacity of each mine (other than mines covered by paragraphs b and c) shall be determined by taking the total coal tonnage shipped by the mine during the preceding month, dividing it by the number of hours worked in producing it (see paragraph e) and multiplying the quotient by the number of hours in the recognized work day (not more than ten hours) of the individual mine. The result shall be termed the 'daily rating' of such mine, and shall be the basis on which cars shall be distributed to it.

"b. The daily capacity of a mine which is served jointly by or for two or more carriers (steam, electric or water) shall be determined by taking the total tonnage shipped by the mine via all such carriers during the preceding month, dividing it by the number of hours worked in producing it (see paragraph e) and multiplying the quotient by the number of hours in the recognized work day (not more than ten hours) of the individual mine. The result shall be termed the 'gross daily rating' of such mine and shall be the basis on which cars shall be distributed to it; provided, that if track or other limiting conditions further restrict its ability to ship via (note a) railroad, such conditions shall be the limiting factor for the (note a) railroad's daily rating of such mine.

"c. The daily capacity of a mine delivering part of its output to a coking plant, to locomotives at the tippie, or to local trade shall be determined by taking the total coal tonnage shipped in railroad cars during the preceding month, dividing it by the number of hours worked (see paragraph e) and multiplying the quotient by the number of hours in the recognized work day (not more than ten hours) of the individual mine. The result shall be termed the 'daily rating' of such mine and shall be the basis on which cars shall be distributed to it.

"d. When the fires are withdrawn from part (or all) of the ovens at an operation coking part of its output, for the purpose of shipping coal production formerly used in charging ovens, the daily rating of the mine shall be increased to include the average tonnage per day so diverted in the previous month, until the beginning of the next rating period, at which time the daily rating of the mine shall be determined in accordance with paragraph a or c, due allowance being made for such average tonnage so diverted in computing the new daily rating. A corresponding decrease of the mine's rating will be made when the ovens are again placed in blast.

"When a mine that has been coking its entire output desires to ship coal and the fires are withdrawn from part (or all) of its ovens, it shall be given a daily rating for coal shipments corresponding to the average tonnage of coal formerly coked until the beginning of the next rating period, at which time the daily rating of the mines shall be determined in accordance with paragraph a or c.

"e. In determining the number of hours worked in each day at a mine, time will be counted from the established time for beginning work (or the actual time if earlier or later than the established time) on the tippie until the dumping of coal finally ceases for the day, making deductions for the noon intermission when it is taken and for the time lost by reason of being blocked with loads, waiting for additional empty cars, or other railroad disability; provided, that if a greater number of hours is worked in the mine than on the tippie, the mine hours must be reported also, and the number of hours worked in the mine must then be used as the number of hours worked in producing the coal. (See paragraphs a, b, and c.) Time may be deducted for railroad disability only when such railroad disability actually reduces the quantity of coal dumped that day. Time may be deducted when tippie is used for dumping coal into locomotives only when the tippie can not be simultaneously operated for loading cars.

"f. Daily ratings determined in accordance herewith will be revised monthly and made effective on the 10th of the month following the month's performance on which the rating is determined.

"g. If a mine be idle for a period of one full calendar month or more, the last rating determined will be the rating when work is resumed, provided the mine conditions be substantially the same as when the mine closed.

"h. Rating for development purposes based on current performance will be assigned to a new operation in previously undeveloped coal. A new mine will be furnished with a supply of cars sufficient to enable it to work freely in the course of development for a period not exceeding six months after shipments are begun; provided, that if theretofore its ability to load 150 tons per shift (not, however, to exceed two shifts per day) is established, it shall then be rated. A new operation of any other character shall be entitled to a development rating for a period of one month after shipments are begun.

"i. Each mine shall report on a prescribed form to the.....(note b).....promptly at the close of each day:

1. The number of hours in the recognized work day;
2. The established time for beginning the day's work;
3. Actual time work was begun this day on the tippie;
4. If the noon hour intermission is taken, how long;
5. Time lost during the day account:
 - Waiting for railroad cars or other railroad disabilityhours;
 - Strikes or mine labor shortagehours;
 - Mine-disabilityhours;
 - No markethours;
 - All other causeshours;

"6. Time work on tippie ceased for day;

"7. Number of hours worked today on the tippie,; and in the mine,..... (see paragraph e);

"8. Number of net tons of coal loaded for shipment via.....(note a).....railroad;

"9. Total number of net tons of coal produced and shipped via each other outlet.

"Joint mines shall furnish this daily report to each carrier serving them.

"If after notice from the railroad an operator persistently fails to furnish this daily report, he will be penalized by curtailment of his car supply to the amount of 25 per cent. of distribution for one week.

"j. At the close of each month the mine manager or superintendent in charge of actual operation shall report under oath on a prescribed form to the.....(note b).....having jurisdiction, separately for each mine for each month, as follows:

1. Number of hours in the recognized workday;
2. Total number of net tons of coal produced;
3. Total number of net tons of coal shipped via the.....(note a).....railroad;
4. Total number of net tons of coal shipped via each other outlet;
5. Total number of hours worked during the month. (See paragraph e.)

"This report must be forwarded not later than the 3rd of the month following that for which the statement is furnished; provided, that where the location of the mine makes it inconvenient to furnish a report under oath by that date, a report not under oath may be forwarded, and the sworn report forwarded not later than one week after. Joint mines shall furnish this monthly report to each carrier serving them.

"k. If an operator declines or persistently fails to make reports or to make accurate reports to the carrier as required herein, it will be assumed that the mine worked full hours in producing and loading into railroad cars the tonnage shipped, and the daily rating will be computed accordingly.

"l. A statement showing the mine ratings which will govern the car distribution for the succeeding month will be furnished as soon as such ratings are ascertained to such coal mines on this railroad as make application for the same. Such statement will show the mine rating of each mine and the total mine ratings of each coal loading district and the aggregate ratings for all mines and all districts on this railroad, and the percentage of each such figure to the total.

"Note a. Designate name of issuing railroad.

"Note b. Designate title of proper officer of issuing railroad.

Rules Governing the Distribution of Cars to Coal Mine Tipples (Other than Anthracite)

"Whenever the available car supply in any region (or district) is such that all orders for cars can be filled, cars shall be placed at each mine in accordance with its daily order, except that whenever a mine holds unbilled coal loads, it shall be entitled only to empty cars equal in number to the difference between the rating last established for the mine and the number of unbilled coal loads so held. Whenever the available car supply is such that all orders for cars can not be filled, each mine shall be given its pro rata share of cars in accordance with the following rules:

"1. The daily rating, or the daily order for cars if less than the rating, shall be the basis for car distribution.

"2. Grouping of mines, or pooling of cars as between mines, will not be permitted.

"3. On application of mine operators and in the discretion of the railroad, cars may be placed on such days only and at such mines only as may elect to work, and overs and shortages in car supply resulting from this distribution shall be adjusted on succeeding days.

"4. Each mine operator shall report to the car distributor at....(note 1)....p. m. daily:

- a. Number of unconsigned loads on hand at 7 a. m.
- b. Number of empty and partly loaded cars on hand at 7 a. m.
- c. Additional number of empty cars received during the day.
- d. Aggregate number of empty cars received during the day.
- e. Number of cars loaded during the day.
- f. Number of empty cars standing over at close of day.
- g. Number of empty cars standing over at close of day which were received prior to 7 a. m.,.....cars; and prior to 10 a. m.,.....cars.
- h. Number of partly loaded cars under tippie at close of day.
- i. Number of unconsigned loads on hand at close of day.
- j. Additional number of empty cars required for loading following day.
- k. Note 2.

"Copies of orders for cars for a mine that is joint with any other carrier (steam, electric or water) shall be filed with a designated representative of each such carrier. Such combined requisitions must not exceed the gross daily rating of the mine.

"6. The recognized standard car for coal car distribution is 50 tons. Others are compared thereto by tenths of a car; i. e., 80,000 pounds capacity equals eight-tenths (.8) of a car; 140,000 pounds capacity one and four-tenths (1.4) cars, etc., and cars must be charged and car distribution records maintained accordingly.

"6. a. All cars placed at a mine during each period of 24 hours ending at 10 o'clock a. m. (or when Sundays or holidays intervene, the longer period ending at 10 o'clock a. m. of the day immediately succeeding the Sunday or holiday) shall be charged against the mine on the day when such period ends; provided, that if the cars placed at 7 o'clock a. m. (not including partly loaded cars) do not equal or exceed in number 25 per cent. of the daily rating (or order if less than the rating) then no cars will be charged against the mine that day except such as are loaded on that day.

"b. Cars placed between 10 o'clock a. m. and the time the mine ceases work for the day, if loaded or partly loaded on the day placed, will be charged against the mine on that day.

"c. All cars of other than railroad ownership (commonly called private cars) placed for owners loading will be considered as ordered.

"7. The pro rata share of cars to which each mine is entitled, except as provided in rule 9, shall be based on its rating (or order when less than its rating). When a mine has empty or partly loaded cars which were placed prior to 7 a. m., or unconsigned loads standing over at the close of the day's business, such cars shall be charged against it each service day thereafter while they are detained, except as otherwise provided in rule 6.

"If on any day a mine be furnished with cars totaling less than 100 per cent. of its rating (or order if less than its rating) and for any cause whatever other than railroad responsibility fails to load the entire number, the mine shall be considered as having been furnished 100 per cent. of its requirements, and its order shall be arbitrarily reduced to the number of cars furnished.

"8. Private cars and cars placed for railroad fuel loading in accordance with the decisions of the Interstate Commerce Commission in *R.R. Com. of Ohio, et al, v. H. V. Ry. Co.*, 12 I. C. C., 398, and *Traer v. Chicago & Alton R.R. Co., et al*, 13 I. C. C., 451 will be designated as 'assigned' cars. All other cars will be designated as 'unassigned' cars.

"9. If the number of assigned cars placed at a mine during any period, as provided in rule 6, equals or exceeds the mine's pro rata share of the available car supply, it shall not be entitled to any unassigned cars. The assigned cars, together with the mine's requirements, will be eliminated, and the remainder of the available car supply pro rated to the other mines, based on a revised percentage by reason of such elimination.

"10. If the number of assigned cars placed at a mine during any period, as provided in rule 6, is less than its pro rata share, based on a revised percentage, it shall be entitled to receive unassigned cars in addition thereto to make up its pro rata share.

"11. If a mine receives more or less cars than it is entitled to during any period, as provided in rule 6 (and after eliminating assigned cars as provided in rule 9), it will be charged with a surplus or credited with a shortage accordingly, and the discrepancy adjusted as promptly as practicable.

"12. A statement showing the car distribution for the preceding month will be furnished as soon as such distribution is ascertained, to such coal mines on this railroad as make application for the same. Such statement will show the car distribution of each mine, the total car distribution of each coal loading district, the aggregate distribution for all mines and all districts on this railroad, and the percentage of each such figure to the total.

"Note 1. Hour may be named by the issuing railroad.

"Note 2. Issuing railroad may ask additional necessary information pertaining to car supply."

UTILIZATION OF PENNSYLVANIA SOFT COAL PRODUCTION

The detailed statements embraced in the annual review of the Pennsylvania Department of Mines show the following distribution (in net tons), as to use of the bituminous coal mined in Pennsylvania during the years 1914-1918, inclusive:

Distribution	1914	1915	1916	1917*	1918*
Shipped	115,108,258	120,114,660	124,447,078	128,965,937	137,492,980
Sold at mines	1,379,319	1,192,253	1,614,639	5,275,741	4,984,384
Used in coke making	25,581,895	32,752,722	39,572,799	34,706,737	32,460,487
Used in operating ..	3,815,058	3,360,433	3,489,298	3,499,727	3,612,890
Total	145,884,530	157,420,068	169,123,814	172,448,142	178,550,741

*Based on reports of the United States Geological Survey

HIGH LIGHTS IN ANTHRACITE TRADE HISTORY

By E. W. PARKER,

Director, Anthracite Bureau of Information.

The first knowledge among the white population of the United States that anthracite existed in the northeastern part of Pennsylvania appears to have been in 1762, when discovery was made of it by a company of Connecticut pioneers at the mouth of Mill Creek, near Wilkes-Barre. Dr. Egle, in his "History of Pennsylvania," states that when the land was laid out into townships, there was reserved "for after disposal all beds of iron ore and coal that may be within the towns ordered for settlement." Four years later, or in 1766, James Tilghman wrote to Thomas and Richard Penn in England that his brother-in-law, a Colonel Francis, had located "a considerable body of good land and a great fund of coal in the hills which surround a fine and extensive bottom."

The first use of this material, which at that time was designated as "stone coal," appears to have been made by one Obidiah Gore, a blacksmith, who used anthracite in his forge about 1770 or 1771. After this it appears that the use of anthracite by blacksmiths became quite general in that vicinity.

Although the shipments of anthracite are generally considered as having been begun in 1820, when 365 tons were transported from the Lehigh region to Philadelphia, considerable quantities of coal were shipped from the Wyoming region, near Wilkes-Barre, during and subsequent to the Revolutionary War. The first of these shipments were made in 1776 when the Proprietary Government of Pennsylvania loaded coal on flat boats and floated it down the Susquehanna River from Wilkes-Barre to Harrisburg. From Harrisburg it was hauled to the arsenal at Carlisle by wagons and there used in the manufacture of munitions of war. This coal was mined near Mill Creek and was probably from the same bed as that mentioned as the original discovery.

PUTTING MAUCH CHUNK ON THE MAP

Other discoveries are said to have been made between 1776 and 1790, and in 1788 Jesse Fell is said to have used anthracite in his nailery. The most important discovery about this time, however, seems to have been the one made in 1791 near the town of Summit Hill, nine miles west of Mauch Chunk. This resulted in the formation in 1792 of the Lehigh Coal Mine Co., which was afterwards consolidated with the Lehigh Navigation Co., first as the Lehigh Navigation & Coal Co., and subsequently changed to the Lehigh Coal & Navigation Co., which has been continuously in business from 1821 to the present time.

An interesting document of this period is the following letter from Jesse Fell to his cousin, Jonathan Fell:

Wilkes-Barre, December 1, 1826.

Esteemed Cousin:

When I saw thee last, I believe I promised to write to thee and give thee some data about the first discovery and use of the stone coal in our valley (I will call it stone coal because everybody knows what is meant by that name).

The late Judge Gore in his lifetime, informed me that he and his brother, the late Captain Daniel Gore (both being blacksmiths) were the first that discovered and used this coal in their blacksmith's fires, and found it to answer their purpose well. This was before the Revolutionary War, and as near as I can recollect information, about the year 1770, or 1771, and it has been in use ever since, by the blacksmiths of the place.

In the year 1778, I used it in the nailery and found it to be profitable in that business. The nails made with it, would beat the mate of the rods and frequently balance over. But it was the opinion of those that worked it in their furnaces, that it would not do for fuel, because when a small parcell was left on their fires and not blown, it would go out. Notwithstanding this opinion prevailed, I had, for some time, entertained the idea that if a sufficient body of it was ignited it would burn. Accordingly in the month of February, 1808, I procured a grate, made of small iron rods, ten inches in depth and ten inches in height, and set it up in my common room fireplace, and on first lighting it found it to burn excellently well. This was the first successful attempt to burn our stone coal in a grate, so far as my knowledge extends. On its being put in operation, my neighbors flocked to see the novelty; but many would not believe the fact until convinced by ocular demonstration. Such was the effect of this pleasing discovery, that in a few days there were a number of grates put in operation. This brought the stone coal into popular notice. I need not mention the many uses to which it may be applied, as you who are in the coal concern, have the means of knowing its value.

I find we have various qualities of coal, but our best specimens are said to be superior to any yet known, and we have it in sufficient quantity to supply the world. Here it is—but the best way of getting it to market is yet to be discovered.

The market at present is down the Susquehanna River, but great improvements must be made in the river ere it can be a safe and sure conveyance. Looking forward Wilkes-Barre is about eleven miles from Lehigh below the junction of all the creeks you pass, from the Pocono to Wilkes-Barre mountain. This I suppose is known, and I believe the principal transport of our coal will, in time, pass that way and down the Lehigh; but this I do not expect to live to see.

I am, thy affectionate cousin,

JONATHAN FELL.

JESSE FELL.

LULL FOLLOWED REVOLUTIONARY WAR

After the demand for anthracite for government use in the manufacture of munitions had passed there does not seem to have been any attempt to ship coal from the region until after the beginning of the 19th Century. In 1805 or 1806, John and Obidiah Smith, who had settled in Plymouth, Pa., bought coal lands and began shipping down the Susquehanna River. Fifty-five tons shipped in 1807, to Columbia, Pa., seems to be the first record of actual quantity shipped. During the next five or six years, according to George B. Kulp, the shipments increased to about 500 tons annually, some of the coal going as far as Baltimore and to New York. The price at Baltimore is said to have been \$10 a ton and at New York \$12. In order to introduce this coal, the Smith brothers accompanied their arks, taking with them suitable grates, which were set up in public houses in order, to demonstrate the manner in which the fuel should be used.

In 1813 the Lehigh Coal Mine Co. made a lease to Messrs. Miner, Cist and Robinson for the shipment of 10,000 bushels of coal to Philadelphia annually. This transaction did not prove profitable to the lessees because of the hazardous character of the water transportation. In December, 1817, the same company executed a lease to Messrs. White and Hazard for 20 years on condition that they should deliver at least 40,000 bushels of coal annually in Philadelphia and should pay upon demand one ear of corn as annual rental of the property.

On the 10th of August, 1818, the Lehigh Navigation Co. was formed, with a capitalization of \$50,000, and the work of opening navigation on the Lehigh River was begun. On the 21st of October, in the same year, the Lehigh Coal Co. was formed, with a capitalization of \$55,000, for the purpose of making a road from the river to the mines, and of bringing the

coal to market by the new navigation. This road is said to be the first ever laid out by an instrument. On the 21st of April, 1820, the two companies combined their interests until the title of "The Lehigh Navigation & Coal Co.," added \$20,000 to its capitalization, and, as already stated, shipped in that year to Philadelphia 365 tons of coal. On the 1st of May in the following year, 1821, the company changed its name to "The Lehigh Coal & Navigation Co.," which organization continues to the present time.

D. & H. FOLLOWED "OLD COMPANY" DEVELOPMENTS

The Delaware & Hudson Canal Co., the next organization to undertake the mining and transportation of anthracite, was incorporated in 1823 or 1825, and in 1829 began the shipment of coal by gravity road from Carbon-dale to Honesdale, thence by canal to Rondout, N. Y., and thence down the Hudson to New York City.

The first use of anthracite as a blast furnace fuel was in 1830. Prior to this time the only blast furnace fuel in use in the United States was charcoal. The use of anthracite for this purpose increased rapidly and in 1855 it passed charcoal as a blast furnace fuel. It held this place until 1875, when it was displaced by coke.

The chronology of the anthracite industry from this date to practically the beginning of the Civil War was as follows:

1831—North Branch Canal completed to Nanticoke. Morris Canal opened to Newark. Nesquehoning railroad and plane built. Dr. Geisseneimer applied for a patent for making iron with anthracite.

1832—Shamokin division of Northern Central Ry. opened. Little Schuylkill R.R. began shipping from Tamaqua.

1833—Delaware division of Pennsylvania Canal opened.

1834—Mahanoy and Shamokin basins developed. North Branch Canal completed to Lackawanna River.

1836—Franklin Institute, of Philadelphia, offered a prize to the one who should first make over 20 tons of pig iron with anthracite (not awarded). Morris Canal opened to Jersey City.

1837—Lehigh navigation to White Haven opened. First shipments of coal from Beaver Meadow region. Shipment of coal begun from Pine Grove via Union Canal. Morris & Essex R.R. opened.

1838—First shipments of coal from Hazleton region. Anthracite used in blast furnaces at Mauch Chunk and Pottsville.

1839—Shipments begun westward from Shamokin and Lykens Valley regions.

1840—Quakake R.R. opened (extended to Mount Carmel in 1862). First geological survey of the anthracite fields completed.

1841—Reading R.R. carried 850 tons of coal.

1842—Philadelphia & Reading R.R. began carrying coal to Philadelphia.

1843—Lehigh Coal & Navigation Co's railroad from White Haven completed.

1846—Shipments from Wyoming region via Lehigh & Susquehanna R.R. and Lehigh Canal.

1849—Washington Coal Co. (organized 1838) merged into Pennsylvania Coal Co.

1850—Pennsylvania Coal Co. began business.

1851—Delaware, Lackawanna & Western R.R. built from Scranton to Great Bend.

1852—Central R.R. of New Jersey opened from Elizabeth to Easton. Delaware, Lackawanna & Western R.R. began breaking coal into sizes for market, followed by Delaware & Hudson Coal Co.

1855—Anthracite leads charcoal in the manufacture of pig iron. Lehigh Valley R.R. began carrying coal to Phillipsburg.

1856—Delaware, Lackawanna & Western R.R. completed to Delaware Water Gap. Shipments began from Trevorton.

1857—Belvidere-Delaware R.R. began transporting coal. North Pennsylvania R.R. opened.

1858—Mining began in McCauley Mountain region. Lackawanna & Bloomsburg R.R. opened (leased to Delaware, Lackawanna & Western R.R. in 1873).

In 1869, when the *Coal Trade Journal* made its bow to the coal trade and began its successful career in the then almost untried field of trade journalism, the anthracite industry was just about closing the first half century of its existence. It is well known that some anthracite was mined in the Wyoming Valley, shipped by flat boats down the Susquehanna River to Columbia, and hauled from there to Carlisle, where it was used in the manufacture of munitions for the Continental Army in the Revolutionary War. No records were kept, or at least none exist, of the quantity of coal used at that time. In 1807 there were shipped from the same region 55 tons, and it has been estimated that between that date and 1820 about 10,000 tons were mined in and sent out from the Wyoming Valley. Custom, however, usually dates the beginning of the anthracite industry from 1820, when 365 tons, one ton for each day of the year, were shipped by the Lehigh Navigation & Coal Co. to Philadelphia. And as this was the first organized attempt at anthracite mining and shipment, the Lehigh River having been made "navigable" for the purpose by the Lehigh Navigation Co., the dating of the "industry" from that time is probably justified.

This initial shipment of "Old Company's Lehigh" is said to have overstocked the coal market of Philadelphia and the proprietors of the enterprise experienced great difficulty in disposing of the shipment within the year. The present consumption of anthracite in Philadelphia exceeds by a considerable amount, each of the 24 hours in the day, the quantity of coal that glutted the market for the entire year 1820.

In 1869 the northern states had recovered to a great extent from the effects of the Civil War, and anthracite production, which had grown to an average of 12,000,000 net tons in 1863, 1864 and 1865, increased to a little tion has grown with a remarkable parallelism to the increase in population.

ANTHRACITE PRODUCTION KEEPS PACE WITH POPULATION

In 1870 the population of the United States numbered 38,560,000 persons, and while the output of anthracite had a set-back that year to 15,600,000 tons, it recovered in 1871 to over 19,000,000 tons. At the end of the next decade the population had increased to 50,000,000, and anthracite production to 28,650,000. In 1890 our population was 62,600,000, and the anthracite mines turned out 46,500,000. The last year of the century found 76,300,000 people in the United States and there were produced 57,368,000 tons of hard coal. At the latest census (1910) our population was 92,000,000, and the anthracite production was 84,485,000 tons.

During this time the use of anthracite as a blast furnace fuel (in which at an earlier date it was an important factor) has practically ceased and it has also been largely eliminated as a manufacturing fuel—at least comparatively—supplanted in this respect by bituminous coal.

The birth year of the *Coal Trade Journal* marked the end of anthracite supremacy compared with bituminous coal so far as quantity production is concerned. Up to that year more than 50 per cent. of the coal pro-

duction of the United States was anthracite, but as the iron resources of the Lake Superior region were opened up, and manufacturing industries developed with a rapidity unprecedented in the world's history, the bituminous coal resources of the Appalachians and the central and western states were intensively exploited until at the present time bituminous coal production is more than five times that of anthracite. This change, while rapid, has been gradual, and it is not possible to fix any date of particular importance, except to note that in 1875 the use of anthracite as a blast furnace fuel became secondary to coke.

LOSS OF INDUSTRIAL MARKET PUBLIC BENEFIT

The withdrawal of anthracite as a manufacturing fuel, involuntary though it was, has in the long run been beneficent in its result for the people as a whole. Anthracite is Nature's domestic fuel *par excellence*, and the more that it is recognized and used for such purpose, the more are Nature's designs carried out. Today by far the larger part of the anthracite production is used for domestic purposes. Somewhat over 60 per cent. is "domestic sizes"—egg, stove, chestnut and pea—and the use of the "steam sizes" in apartment houses, hotels, and office buildings is more of a domestic than manufacturing character.

It is for this reason probably that the production of anthracite has followed so closely the increase in population and does not, as does bituminous coal, reflect the development of the United States as a manufacturing country.

This fifty years in which the *Coal Trade Journal* has recorded, weekly, the happenings of the coal mining industry has been, so far as anthracite is concerned, replete with interest. In a review, necessarily brief as the present one, it is not possible to go into the details of the interesting history, but to touch the high points only.

At the beginning of the period the anthracite region was in the midst of a veritable reign of terror. For 15 years, from 1862 to 1877, the region was infested with a band of cutthroats and murderers, known in the earlier stages of their existence as the "Buckshots" and later as the "Molly Maguires." During these 15 years hardly anyone's life was secure in any of the anthracite producing counties. It is probably not known, nor ever will be known, how many murders were committed, nor how many hundreds of thousands of dollars' worth of property were destroyed during those years of terrorism. Law was defied, and because of lack of its administration (largely, doubtless, because of fear on the part of the officers entrusted with its execution) fell into contempt, until in 1876 through the instrumentality of the late Franklin B. Gowen and a Pinkerton detective, James McParlan, who had become a member of the order, many of its members were brought to trial, found guilty, and executed. The final curtain was drawn at Mauch Chunk on June 21, 1877, when five men were hanged at that place. Not all the guilty ones were arrested and punished. Numbers of them fled the region and some outrages that were committed in later years in some of the mining districts of the western states have been attributed to members of the Molly Maguires. But enough were convicted and executed to reestablish law and order in the anthracite region, and Molly Maguicism exists now only as a hideous memory.

LAWLESSNESS GIVES PLACE TO PEACE

It is worthy of note that the half century of this review that began in the anthracite region with such unparalleled record of lawlessness and crime, terminates with a period of nearly two decades of industrial peace

which has made that section of the country as famous as it was then notorious. How this has been effected will be discussed later.

The beginning of the period covered by the present review witnessed the inauguration of real labor organization among the mine workers in the anthracite region. Attempts at such organization had been previously made, notably the ill-fated "Bates' Union" of 1849, that ended so unprofitably to the confiding members. And during the early '60s a number of local unions were organized, but because of their non-centralized character, they were lacking in strength and effectiveness. During the latter part of 1868 and the early part of 1869, however, the region became pretty thoroughly organized through the "Workingmen's Benevolent Association," this union being strengthened through the passage in 1868 by the Pennsylvania Legislature of an act which provided that "eight hours of labor, between the rising and setting of the sun shall be deemed and held to be a legal day's work, in all cases of labor and service by the day, where there is no contract or agreement to the contrary."

As has been the history of labor organization, the "W. B. A." was ushered into existence by a strike, which began the early part of July, 1868, and ended the latter part of August, the men striking for an eight-hour day with the same pay as for ten hours. The men obtained an advance in wages and withdrew the demand for the eight-hour day. In the following year, a strike against a reduction in wages resulted in the adoption of sliding scales in the Lehigh and Schuylkill regions, the Lehigh scale being based on prices at tidewater and the Schuylkill on the price at Port Carbon. At the present time (spring of 1919), when some miners are getting as much as \$300 and more a month, the following rates of wages paid in the Schuylkill region during seven months of 1869 will prove of interest:

Month	Rate	Wages per Week		
		Miners	Inside Laborers	Outside Laborers
June	10 per cent. above basis	\$15.40	\$13.20	\$12.10
July	15 per cent. above basis	16.10	13.80	12.65
August	35 per cent. above basis	18.90	16.20	14.85
September	Basis	14.00	12.00	11.00
October	10 per cent. above basis	15.40	13.20	12.10
November	15 per cent. above basis	16.10	13.80	12.65
December	Basis	14.00	12.00	11.00

UNIONISM CRADLED IN VIOLENCE

The next two years were somewhat turbulent, strikes occurring each year, and in 1871, when attempts were made to operate some mines near Scranton with non-union men, bloodshed resulted, three men being killed and the militia being called out to restore order. An agreement made in January, 1872, and the panic and business depression of 1873 sufficed to maintain comparative peace until 1875, when a movement to reduce wages precipitated further trouble but resulted in the defeat and finally the end of the W. B. A., which early success had made arrogant and oppressive.

After the defeat of the W. B. A. and the breaking up of the Molly Maguires, the anthracite region was practically unorganized until 1900 except for a brief period in the late '80s when the Knights of Labor secured a temporary foothold. The last year of the century marked the appearance in the anthracite region of the U. M. W. of A., an organization that had achieved, through the leadership of John Mitchell, signal success in the soft coal regions. As the organization represented a rival industry the anthracite operators strenuously objected to treating with it. A strike

for higher wages, and the usual demand for improved working conditions resulted, and was compromised in October through political influence working on the financial interests, in apprehension of the effect upon the Presidential campaign which was then at white heat.

The great, and up to date the final, general strike in the anthracite region was that of 1902, when Mitchell began the struggle for recognition of his union in the anthracite field. The history of that struggle, momentous as it was, is of too recent date to need recounting in a review, necessarily brief as this one must be. It is with the after-results that present history is most concerned. Suffice it to say that the anthracite operators again refused to negotiate with a union dominated by a competing industry, and on May 15 a general strike was called. The entire region was practically tied up for six months, and as is usually the case at such times, much disorder prevailed. A number of men were killed and considerable property destroyed, and even the state militia, which was called out, could not maintain order.

By the time the cooler days of autumn had arrived the supply of anthracite previously mined and marketed had been exhausted and the entire anthracite consuming territory was threatened with a fireless winter. In the more northerly sections suffering had already begun. The situation was accordingly acute, when President Roosevelt brought the weight of his great office and of his own strong personality to bear upon the controversy. After several conferences, which as he says in his own biography, were at times of a discouraging nature, he succeeded in getting the contending parties to agree to submit their differences to the judgment of a commission to be appointed by him, work to be resumed at once. Work was resumed on October 23, the same day that President Roosevelt appointed the Anthracite Coal Strike Commission, which was instructed "to inquire into, consider and pass upon the questions in controversy * * * and the causes out of which the controversy arose," and to "endeavor to establish the relations between the employers and wage workers in the anthracite fields upon a just and permanent basis."

UNION NOT RECOGNIZED BY ROOSEVELT COMMISSION

In the awards of the Commission, which were 11 in number, "recognition of the union" was not granted; it was, on the other hand, specifically denied, but in the working out of the provision for establishing peace in the region, recognition of the organization as a means of treating with the employes has been, in effect, conceded. Whatever there may have been of merit in the other awards of the Commission in the settlement of that controversy, the most important of its judgments was that contained in the fourth award, which established the Anthracite Board of Conciliation, to which should be referred "any difficulty or disagreement arising under this award, either as to its interpretation or application, or in any way growing out of the relations of the employers and employed" which could not be settled by consultation between the miners and the mine officials. This Board was organized almost immediately after the Commission had completed its work and reported to the President. It consists, and has from the first consisted, of three representatives of the operators, one each from the Wyoming, Lehigh and Schuylkill districts, and the three district presidents of the U. M. W. of A. in the anthracite region.

The history of this Board of Conciliation has been unique in the annals of labor controversies. It has carried out the desire of the lamented Roosevelt for the maintenance of peace between anthracite operators and

their employees, for in the 17 years from 1902 to 1919, while there have, of course, been some local disaffections, there has been no general strike in the region. On the other hand, anthracite mining has been at peace for one-third of the 50 years just completed. It has been more than a period of peace; it has been a period of contentment and prosperity for the mine workers and consequently for the communities of which they are a part. During the 17 years of its existence the Board of Conciliation has heard and adjusted approximately 1,000 cases, and its method of procedure, simple and effective as it is, has set an example for other lines of industry to follow.

The first general mine law affecting the anthracite region was passed in 1870, but a year previous, the beginning of this 50-year review, an inspection law was passed for Schuylkill County, and was the direct result of the strikes for the eight-hour day in that county in 1868. The general law of 1870, known as the "ventilation bill," provided for the appointment of inspectors in all of the anthracite producing counties, and was the direct result of the Avondale disaster, which occurred on September 6, 1869. This law continued on the statute books, without material change, until 1885, when it was thoroughly revised in accordance with recommendations of a commission appointed by the governor, and four years later the law requiring two years' experience in the anthracite mines before a worker could obtain a certificate as a miner was enacted. In 1901 the legislature threw the mine inspection regulations into the realm of local politics by the passage of an act that provided for the election of inspectors instead of their appointment by the governor. This law unfortunately has not been repealed.

The law of 1870 provided for the installation of artificial ventilation, but about 12 years before that the first use of an exhaust fan is said to have been made at Locustdale. Mine fans, however, did not come into general use until after the enactment of the "ventilation bill."

Early in the period under review, or in 1872, the use of jigs for separating the coal from impurities, was introduced by the Lehigh Coal & Navigation Co. This method of preparation developed rapidly in the Lehigh and Schuylkill regions, until at the present time it is almost universal. It is also used to some extent in the Wyoming region. From the use of the jig or washer in the preparation of fresh-mined coal has developed the recovery of usable fuel from the culm banks or waste dumps of the earlier mining. The first recorded recovery of coal from the culm banks was in 1890, when 41,600 tons of washery coal were shipped. This branch of the industry increased in importance quite rapidly for several years, reaching its maximum tonnage in 1907, with 4,301,082 tons of washery coal shipped to market. It then declined until 1913, when only a little over 2,000,000 tons were shipped, increased again to over 3,000,000 tons in 1916, and though the official figures for 1917 and 1918 are not available, it is known that the washeries contributed a considerable portion of the tonnage in those years, probably reaching as much as 5,000,000 tons in 1918.

NATIONALITY OF MINERS CHANGES WITH PASSING YEARS

This review would be incomplete if proper reference were not made to the human interest side of the anthracite industry. Up to the beginning of the period the mine workers in the anthracite region were largely recruited from immigrants from the British Isles and Germany. This early type of immigrants was highly desirable. They came to found

homes and to become American citizens. But, about the time of the collapse of the Workingmen's Benevolent Association, the flow of immigration into the region changed materially. That from Great Britain and Germany began to decline somewhat rapidly, giving way to an influx of a much less desirable population from southern Europe, principally Slavs and Italians. The invasion from southern Europe began about 1875, unimportant at first, for in 1880 the total number in the anthracite region was 1,925. By 1890, however, the number had grown to 43,000, and by 1900 to nearly 90,000.

With this great influx of cheap labor the standard of living in the anthracite region materially declined, and at the time of the great strike of 1902 newspapers and magazines gave unpleasant notoriety to the manner in which it was averred that because of the low wages, the mine workers were compelled to live. As a matter of fact, these new arrivals were living as they were accustomed to live in their native countries, and it has taken a period of time commonly known as a "generation" for these peoples to absorb the American spirit and manner of living. That change has, however, happily taken place and while the last two decades of the last century was a period of retrogression, the first two decades of the present century have witnessed a greater progress and improvement in living conditions than there had been of decline.

The operating companies have been active workers in the social uplift. The shacks and tumbledown structures that 25 years ago served as human habitations have almost entirely disappeared, having given way to attractive and sanitary homes, equipped with bathrooms and other modern conveniences, model workmen's homes, in fact. Most of these are, of course, frame dwellings, but there are many of brick, hollow tile, or concrete; two villages, one near Wilkes-Barre and one near Shenandoah, being of entire concrete construction and "show places" of the region.

While these improvements in living conditions have been going forward, educational facilities have progressed even more markedly, until today it is safe to say that there are no communities of the same size in the United States where better or more attractive school houses are to be found than in the anthracite regions. Handsome and commodious high schools are to be found in every town of any considerable size and in every township, most of them being supplied with auditoriums for lectures and entertainments and with facilities for giving manual training to boys and the domestic arts to girls. At several places in the region are institutes, some established by private gifts or bequests, where instruction in engineering and some of the other higher sciences are given.

HOW FIRST AID WORK HAS GROWN

Probably the greatest work along humanitarian lines that has been accomplished in the anthracite region has been that of training crews in first aid work. "Safety first" is the watchword in and about the anthracite mines and this is backed up by first aid training not excelled, if indeed equaled, in any part of the country. "First aid to the injured" had its birth in the anthracite region and W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., is its father. There are few mines in the region of any importance that have not well-trained first aid crews, and the annual contests of the crews of many of the companies are interesting events of the summer season. Underground hospitals are common, and many cases of injuries treated in these hospitals by the first aid men have been found, when taken to the regular hospital, not to require further

treatment until redressing of the wounds or burns was necessary. This first aid work, like the improvements in housing conditions, has been the product of the present century, having had its beginning in 1900. One of its beneficent results has been the recruiting of young men for the medical and surgical professions, as not an inconsiderable number of the first aid crews have graduated from that work into physicians and surgeons.

The first general hospital for the treatment of accident cases in the region was established by an act of the legislature approved June 1, 1879, and was opened November 12, 1883, and another at Hazleton was established by an act of the legislature of 1887.

PRODUCTION

As stated in a preceding paragraph, the production of anthracite in the year that the *Coal Trade Journal* stepped upon the stage was in round numbers 17,000,000 net tons. In the same year the production of bituminous coal was 16,000,000 net tons, or 1,000,000 tons less than that of anthracite. In 1918 the production of anthracite had increased to 99,473,000 net tons, while that of bituminous coal had reached the enormous total of 586,000,000 tons. There is therefore really "no comparison" between the two so far as tonnage records go. Anthracite has about reached its maximum annual output. The possibilities of the future in bituminous are limited only by the speculative ability of the prophets. The annual production of anthracite, in net tons, for the 50 years beginning with 1869 and ending with 1918 has been as follows:

1869.....17,083,134	1886.....39,035,446	1903.....74,607,068
1870.....15,664,275	1887.....42,088,197	1904.....73,156,709
1871.....19,342,057	1888.....46,619,564	1905.....77,659,850
1872.....24,233,166	1889.....45,546,970	1906.....71,282,411
1873.....26,152,837	1890.....46,468,641	1907.....85,604,312
1874.....24,818,790	1891.....50,665,431	1908.....83,268,754
1875.....22,485,766	1892.....52,472,504	1909.....81,070,359
1876.....22,793,245	1893.....53,967,543	1910.....84,485,236
1877.....25,660,316	1894.....51,921,121	1911.....90,464,067
1878.....21,689,682	1895.....57,999,337	1912.....84,361,598
1879.....30,207,793	1896.....54,346,081	1913.....91,524,922
1880.....28,649,812	1897.....52,611,680	1914.....90,821,507
1881.....31,920,018	1898.....52,382,644	1915.....88,995,061
1882.....35,121,256	1899.....60,418,005	1916.....87,578,493
1883.....38,456,845	1900.....57,367,915	1917.....99,611,811
1884.....37,156,847	1901.....67,471,667	1918.....98,826,084
1885.....38,335,974	1902.....41,373,595	

For current production statistics, tonnages carried by leading railroads and the latest developments in the various producing fields and primary markets see the *COAL TRADE JOURNAL*.

A CENTURY OF ANTHRACITE SHIPMENTS

Nineteen hundred and nineteen may be said to mark the close of the first century of anthracite history. It is true that some shipments were made prior to 1820, but the records of the movement are fragmentary. Since the year mentioned, however, statistics of the shipments from the three major regions are available. The growth revealed by these figures is shown in the following table, which, for the sake of brevity, records the movement during the nineteenth century by five-year intervals.

Year	Tonnage (Gross), Regions and Percentage of Total Shipped by Each Region for Years Given						Total
	Schuylkill	P. C.	Lehigh	P. C.	Wyoming	P. C.	
1820.....			365	100.00			365
1825.....	6,500	18.60	28,393	81.40			34,893
1830.....	89,984	51.50	41,750	23.90	43,000	24.60	174,734
1835.....	339,508	60.54	131,250	23.41	90,000	16.05	560,758
1840.....	490,596	56.75	225,313	26.07	148,470	17.18	864,379
1845.....	1,131,724	56.22	429,453	21.33	451,836	22.45	2,013,013
1850.....	1,840,620	54.80	590,456	20.56	827,823	24.64	3,358,899
1855.....	3,552,943	53.77	1,284,113	19.43	1,771,511	26.80	6,608,567
1860.....	3,749,632	44.04	1,821,674	21.40	2,941,817	34.56	8,513,123
1865.....	4,356,959	45.14	2,040,913	21.14	3,524,519	33.72	9,952,391
1870.....	4,968,157	30.70	3,239,374	20.02	7,974,660	49.28	16,182,191
1875.....	6,281,712	31.87	2,834,605	14.38	10,596,155	53.75	19,712,742
1880.....	7,554,742	32.23	4,462,221	19.05	11,419,279	48.72	23,437,242
1885.....	9,488,426	30.01	5,898,634	18.65	16,236,470	51.34	31,623,530
1890.....	10,867,822	29.68	6,329,658	17.28	19,417,979	53.04	36,615,459
1895.....	14,269,932	30.68	7,298,124	15.69	24,943,421	53.63	46,511,477
1900.....	13,502,732	29.94	6,918,627	15.33	24,686,125	54.73	45,107,484
1901.....	16,019,591	29.92	7,211,974	13.45	30,337,036	56.63	53,568,601
1902.....	8,471,391	27.15	3,470,736	11.12	19,258,763	61.73	31,200,890
1903.....	16,474,790	27.75	7,164,783	12.07	35,723,258	60.18	59,362,831
1904*.....	16,379,292	28.49	7,107,220	12.36	34,006,009	59.15	57,492,522
1905*.....	17,703,099	28.33	7,849,205	12.78	35,857,897	58.39	61,410,201
1906*.....	16,011,285	28.75	7,046,617	12.65	32,640,693	58.60	55,698,595
1907*.....	20,141,288	30.01	8,329,653	12.41	38,638,452	57.58	67,109,393
1908*.....	18,006,464	27.85	7,786,255	12.04	38,872,295	60.11	64,665,014
1909*.....	16,864,147	27.21	7,532,271	12.16	37,573,467	60.63	61,969,883
1910*.....	17,845,020	27.49	8,627,539	13.29	38,433,227	59.22	64,905,786
1911*.....	19,118,300	27.38	9,682,147	13.86	41,033,354	58.76	69,833,801
1912*.....	18,213,960	28.16	8,800,125	13.61	37,653,164	58.23	64,667,249
1913*.....	19,417,385	27.44	10,180,021	14.39	41,160,906	58.17	70,758,312
1914*.....	19,416,586	26.33	10,272,308	14.69	41,258,463	58.98	69,947,357
1915*.....	18,043,709	26.46	10,190,421	14.95	39,945,344	58.59	68,179,474
1916*.....	19,677,476	29.34	9,437,545	14.07	37,945,335	56.59	67,060,356
1917*.....	22,028,055	28.56	11,456,963	14.87	43,577,769	56.55	77,062,787
1918*.....	22,009,607	29.00	11,552,042	15.64	42,746,038	56.68	75,894,217
1919*.....	19,899,519	29.76	10,266,479	15.33	36,689,313	54.89	66,855,311

*Washery and river coal included.

Aside from the steady growth in total tonnage, the most noteworthy feature displayed by these statistics is the steady gains made by the Wyoming region, which has been contributing over half of the total shipments since 1884.

SHIPMENTS OF ANTHRACITE: LARGE AND SMALL SIZES

Forty per cent. of the anthracite shipped in 1918 (the latest year for which detailed figures are available) was pea or smaller sizes. This was an increase of nine-tenths of one per cent. as compared with the figures for the year preceding. The shipments of the small or steam sizes during the year 1890 amounted to 8,460,781 tons. Between 1890 and 1899 the output doubled, and in 1905 it was nearly treble the tonnage of 1890. The shipments for ten years, 1909-18, are shown on the next page.

Year	—SIZES ABOVE PEAS—		—PEAS AND SMALLER—		Total Shipments
	Quantity	P. Ct.	Quantity	P. Ct.	
1909.....	36,437,762	58.1	26,250,597	41.9	62,688,359
1910.....	38,415,323	58.5	27,297,438	41.5	65,712,761
1911.....	41,728,071	59.2	28,696,126	40.8	70,424,197
1912.....	39,538,583	60.6	25,662,670	39.4	65,201,253
1913.....	43,934,919	61.6	27,360,797	38.4	71,295,716
1914.....	43,176,836	61.3	27,287,210	38.7	70,464,046
1915.....	41,210,668	60.0	27,452,753	40.0	68,666,456
1916.....	40,747,215	60.3	26,754,148	39.7	67,501,363
1917.....	47,195,895	60.9	30,294,148	39.1	77,490,943
1918.....	45,994,903	60.0	30,726,254	40.0	76,721,157

The figures given are in gross tons and include shipments from Sullivan County.

SHIPMENTS OF ANTHRACITE ACCORDING TO SIZES

The statistics below are the latest available covering detailed figures on anthracite shipments by sizes.

Size	1913	1914	1915	1916	1917	1918
Lump *	362,714	180,516	115,348	119,562	154,957	133,529
Broken	3,503,495	3,547,117	3,349,933	3,543,326	4,531,889	4,750,320
Egg	8,978,107	8,718,809	8,117,340	8,487,032	10,431,455	10,279,963
Stove	13,921,786	14,505,502	14,061,069	13,598,796	14,324,505	13,422,950
Chestnut	17,168,817	16,224,892	15,570,013	14,998,499	17,753,449	17,408,141
Pea	8,208,681	8,277,619	8,210,668	7,520,804	6,824,003	6,471,381
Buckwheat ..	9,504,161	9,459,788	9,322,533	9,569,817	11,659,176	10,800,796
Rice	5,634,037	4,622,389	5,560,498	4,582,720	6,119,555	5,396,022
Barley	3,688,557	4,505,986	3,836,125	3,342,040	3,073,684	5,024,864
Boiler .....	.....	.....	.....	1,394,876	1,689,075	1,675,189
Screenings † ..	325,361	421,428	522,929	343,891	928,655	1,358,002
Total ..	71,295,716	70,464,046	68,666,456	67,501,363	77,490,043	76,721,157

* Includes steamboat.

† Includes culm, buckwheat 4 and 5, screenings and mine-run.

The above figures include shipments from Sullivan County. These tonnages were as follows:

Size	1913	1914	1915	1916	1917	1918
Broken	13,716	8,655	13,306	10,497	22,394	32,263
Egg	49,315	47,154	44,971	43,704	41,861	36,912
Stove	80,009	73,364	72,100	66,003	59,180	54,289
Chestnut	103,185	94,871	90,299	70,000	69,780	75,399
Pea	66,110	69,519	58,276	53,131	48,756	52,733
Buckwheat ..	.....	.....	.....	40,000	.....	.....
Rice .....	.....	.....	.....	20,000	.....	.....
Barley .....	.....	.....	.....	20,000	.....	.....
Boiler .....	.....	.....	.....	7,778	.....	.....
Screenings ...	225,069	223,126	208,030	109,895	185,285	161,874
Total ...	537,404	516,689	486,982	441,008	427,256	413,470

Of the total shipments in 1916, 64,367,754 tons, or 95.4 per cent., consisted of freshly mined coal, and 3,133,609 tons, or 4.6 per cent., of "secondary" product—that is, coal recovered from culm banks or dredged from rivers. Nearly all the secondary coal was in pea and smaller sizes.* In 1917, washery and dredge coal totaled 5,413,199 tons, or 7.2 per cent. of the shipments; of this, the tonnage recovered by dredging was 47,622. In 1918 there were 6,640,923 tons or 8.6 per cent. of washed and dredged coal (124,436 tons of the latter) in the total shipments.

DETAILS OF WASHERY PRODUCT

The output of washery coal in 1909, chiefly steam sizes, was 3,694,470 tons, or 5.26 per cent. of the total production. In 1910 washery output was 3,296,318 tons, or 5.02 per cent., of which 28,212 tons was above pea. In 1911 washery output was 3,171,678 tons, or 4.50 per cent., of which 60,056 tons was above pea. In 1912 it was 3,155,150 tons, or 4.84 per cent., of which 99,851 tons was above pea. In 1913 it was 2,090,170 tons, or 2.93 per cent., of which 152,983 tons was above pea. In 1914 it was 1,719,547 tons, or 2.44 per cent., of which 63,591 tons was above pea. In 1915 it was 2,492,639 tons, or 4 per cent., of which 171,846 tons was above pea. In 1916, the washery and dredge coal was 3,133,609 tons, of which 171,946 tons was above pea; in 1917 the tonnage of this coal above pea was 555,576 and in 1918 it was 571,660 tons.

STANDARD SIZES AND PREPARATION OF ANTHRACITE

The following dimensions indicate standard meshes, round and square, for screening anthracite coal:

Grate	Through		Over	
	4 " square	4 1/2" round	2 3/4" square	3 1/8" round
Egg	2 3/4" "	3 1/8" "	2 " "	2 1/4" "
Stove	2 " "	2 1/4" "	1 3/8" "	1 1/8" "
Nut	1 3/8" "	1 1/8" "	3/4" "	7/8" "
Pea	3/4" "	7/8" "	1/2" "	5/8" "
Buckwheat	1/2" "	5/8" "	1/4" "	3/8" "
Rice	1/4" "	3/8" "	1/8" "	3/16" "
Barley	1/8" "	3/16" "		3/32" "

The percentages of foreign matter allowed are as follows:

Size	Slate	Bone
Broken (or Grate)	1 per cent.	2 per cent.
Egg	2 per cent.	2 per cent.
Stove	4 per cent.	3 per cent.
Chestnut *	5 to 7 per cent.	5 per cent.
Pea	8 per cent.	10 per cent.
Buckwheat	10 per cent.	10 per cent.

*An allowance is made on chestnut of from 12 1/2 to 15 per cent. of pea coal.

With regard to the sizing of anthracite during the period of government control, the Pennsylvania Fuel Administration set the following standard:

Egg, stove and chestnut coal could contain not over 5 per cent. of the larger sizes.

Chestnut, not more than 10 per cent. of pea or 5 per cent. of No. 1 buckwheat.

Pea, not more than 15 per cent. of No. 1 buckwheat and five per cent. of rice.

Buckwheat, not more than 15 per cent. of rice.

SHIPMENTS OF ANTHRACITE BY REGIONS

The following figures show that the three great anthracite regions preserve a notable regularity of proportionate output as the years go by:

Year	Schuylkill Gross tons	Lehigh Gross tons	Wyoming Gross tons	Total Gross tons
1908.....	18,006,468	7,786,255	38,872,295	64,665,014
1909.....	16,864,147	7,532,271	37,573,467	61,969,885
1910.....	17,845,020	8,627,539	38,433,227	64,905,786
1911.....	19,375,369	9,775,018	40,805,912	69,954,299
1912.....	18,013,406	8,571,861	37,025,311	63,610,578

THE COAL TRADE

Year	Schuylkill Gross tons	Lehigh Gross tons	Wyoming Gross tons	Total Gross tons
1913.....	19,338,870	10,046,272	40,388,175	69,773,327
1914.....	18,494,087	10,255,620	40,760,803	69,511,110
1915.....	18,039,888	10,304,652	39,539,236	67,883,776
1916.....	19,888,310	9,654,000	37,834,054	67,376,364
1917.....	22,715,086	11,255,490	43,162,729	77,133,305
1918.....	22,755,365	11,511,760	42,382,793	76,649,918
1919.....	19,899,519	10,266,479	36,689,313	66,855,311

Comparing 1919 with 1915, shipments from the Wyoming region last year decreased 2,849,923 gross tons, or 7.3 per cent., the Lehigh region decreased 38,173 gross tons, or 0.37 per cent., while the Schuylkill region increased its shipments 1,859,631 tons, or 10.3 per cent.

SHIPMENTS OF ANTHRACITE COAL BY MONTHS

The shipments of anthracite coal by months for six years have been as follows:

Month	1914*	1915	1916	1917	1918	1919
January	5,175,732	4,833,599	5,884,350	5,940,725	5,638,383	5,934,241
February	4,121,451	4,349,915	5,696,306	5,178,432	5,812,082	3,871,932
March	5,164,703	5,075,293	6,127,351	6,989,075	7,276,717	3,983,908
April	6,072,164	6,665,625	4,528,784	5,592,299	6,368,373	5,224,715
May	6,281,533	5,954,949	5,547,899	6,917,525	6,887,256	5,711,915
June	6,130,186	5,459,610	5,636,975	7,049,037	6,867,669	5,619,591
July	5,391,857	5,103,665	5,432,878	6,724,252	7,084,775	6,052,334
August	5,483,743	5,330,831	5,531,797	7,019,001	7,180,923	6,144,144
September ...	6,246,192	5,662,157	5,544,076	6,372,756	6,234,395	5,687,401
October	6,644,476	6,683,007	5,780,204	7,110,950	6,286,366	6,560,150
November ...	5,928,286	6,494,442	5,992,997	6,545,313	5,276,659	5,971,671
December	5,702,258	6,149,387	5,582,747	5,698,945	5,736,260	6,138,460
Total	68,342,601	67,883,776	67,376,364	77,133,305	76,749,919	66,900,462

* Does not include tonnage shipped over the L. & N. E. R.R.

Including the L. & N. E. figures the record stands:

1913	1914	1915	1916	1917	1918	1919
69,773,327	69,511,110	67,883,776	67,376,364	77,133,305	76,749,919	66,900,462

RECORD MONTHS

The record of large monthly tonnages runs as follows:

January, 1913...6,336,419	May, 1917.....6,917,525	September, 1917.6,372,756
February, 1912...5,875,968	June, 1917.....7,049,037	October, 1917...7,110,950
March, 1918.....7,276,717	July, 1918.....7,084,775	November, 1917.6,545,313
April, 1915...6,665,625	August, 1918...7,180,923	December, 1910..6,231,578

No monthly record now antedates December, 1910; there were five new ones in 1917 and three in 1918.

Coal mine fatalities in the United States during 1919 totaled 2,307, a decrease of 273 from the revised figures for the preceding year, and 389 less than in 1917.

DETAIL STATISTICS OF ANTHRACITE DISTRICTS, 1919

Company	Gross Tons	Company	Gross Tons
FIRST		SECOND	
Hudson Coal Co., Scranton	503,980	Northern Anth. Coal Co., Lopez	161,344
Hillside C. & I. Co., Scranton	439,690	Robertson Coal Co.	133,030
Temple Coal Co., Scranton	311,702	Racket Brook Coal Co., Carbondale..	180,185
Connell Anth. Mining Co., Scranton.	274,048	Smaller operators	88,048
Scranton Coal Co., Scranton	239,460	Total	2,501,293
Mt. Jessup Coal Co., Ltd., Peckville.	219,611		
		Hudson Coal Co., Scranton	2,179,519

Company	Gross Tons
Scranton Coal Co., Scranton	381,737
Temple Coal Co., Scranton	276,085
Archbald Coal Co., Wilkes-Barre	94,466
Rhondda Coal Co., Scranton	77,589
Hillside C. & I. Co., Scranton	77,710
Smaller operators	60,116
Total	3,147,222

THIRD

Hudson Coal Co., Scranton	1,761,192
D., L. & W. R.R. Co., Scranton	760,392
Von Storch Collieries Co., Scranton	105,511
Mid City Coal Co., Scranton	84,804
Leggitts Creek Anth. Co., Scranton	56,561
Scranton Coal Co., Scranton	12,945
Total	2,781,405

FOURTH

Scranton Coal Co., Scranton	699,823
D., L. & W. R.R. Co., Scranton	389,224
Price-Pancoast Coal Co., Scranton	295,505
Pennsylvania Coal Co., Scranton	252,011
Peoples Coal Co., Scranton	127,714
Green Ridge Coal Co., Scranton	65,564
Hudson Coal Co., Scranton	23,124
Se-Rob Coal Co., Scranton	8,911
Total	1,861,676

FIFTH

D., L. & W. R.R. Co., Scranton	2,056,795
Hudson Coal Co., Scranton	427,094
Scranton Anth. Coal Co., Scranton	51,275
W. Y. Moffat, Dunmore	25,392
John Gibbons Coal Co., Minooka	21,030
Total	2,628,586

SIXTH

Pennsylvania Coal Co., Dunmore	1,236,436
D., L. & W. R.R., Scranton	874,843
Hudson Coal Co., Scranton	845,341
Scranton Coal Co., Scranton	306,789
Quinn Coal Co., Scranton	119,443
Mt. Jessup Coal Co., Peckville	82,440
Nay-Aug Coal Co., Dunmore	67,053
Spencer Coal Co., Dunmore	50,258
Bald Mountain Coal Co.	38,170
Carney & Brown Coal Co., Dunmore	29,170
Smaller operators	31,235
Total	3,681,128

SEVENTH

D., L. & W. R.R. Co., Scranton	1,168,783
Pennsylvania Coal Co., Scranton	838,268
Jermyn & Co., Scranton	319,909
Hudson Coal Co., Scranton	166,523
Hillside C. & I. Co., Scranton	121,861
Scranton-Taylor Coal Co., Scranton	27,698
Dennington Coal Co., Scranton	7,587
Total	2,550,629

EIGHTH

Pennsylvania Coal Co., Scranton	2,912,161
Hillside C. & I. Co., Scranton	769,653
Hudson Coal Co., Scranton	288,340
Quinn Coal Co., Scranton	50,000
Total	4,020,154

NINTH

Lehigh Val. Coal Co., Wilkes-Barre	1,564,601
Temple Coal Co., Scranton	398,607
Kingston Coal Co., Kingston	375,666

Company	Gross Tons
Mt. Lookout Coal Co., Scranton	227,941
Healey Coal Co., Plains	8,542
Total	2,575,357

TENTH

Hudson Coal Co., Scranton	945,400
Leh. Val. Coal Co., Wilkes-Barre ...	674,518
D., L. & W. R.R. Co., Scranton	527,595
Haddock Mining Co., Wilkes-Barre..	177,846
Wilkes-Barre Colliery Co., Frackville..	164,012
East Boston Coal Co., Kingston	159,882
Traders Coal Co., Scranton	79,698
Raub Coal Co., Luzerne	74,251
Central Coal Co., Wilkes-Barre	65,646
Conlon Coal Co., Hudson	44,304
Healey Coal Co., Plains	39,803
Total	2,952,450

ELEVENTH

Leh. W.-Barre Coal Co., W.-Barre ..	1,328,581
Lehigh Val. Coal Co., Wilkes-Barre ..	969,771
Hudson Coal Co., Scranton	754,588
W.-Barre Anth. Coal Co., W.-Barre ..	112,689
Red Ash Coal Co.	90,432
Total	3,256,011

TWELFTH

Hudson Coal Co., Scranton	1,166,984
D., L. & W. R.R. Co., Scranton	1,046,614
Leh. & Wilkes-Barre C. Co., W.-Barre ..	827,556
Kingston Coal Co., Kingston	580,379
Plymouth Red Ash Co., Plymouth ..	21,237
Shawnee Coal Co., Plymouth	2,492
Total	3,645,262

THIRTEENTH

D., L. & W. R.R. Co., Scranton	2,169,662
Leh. & Wilkes-Barre C. Co., W.-Barre ..	1,052,968
Leh. Valley Coal Co., Wilkes-Barre ..	489,057
Pittston C.M. Co., Pittston	129,375
Geo. F. Lee Coal Co., Wilkes-Barre..	91,963
West Nanticoke Coal Co., Philadelphia ..	76,383
Black Creek Coal Co.	2,867
Total	3,962,175

FOURTEENTH

Sus. Collieries Co., Wilkes-Barre ...	1,519,081
D., L. & W. R.R. Co., Scranton	808,557
Leh. & Wilkes-Barre C. Co., W.-Barre ..	737,310
West End Coal Co., Mocanagua	493,666
Alden Coal Co., Alden	379,009
E. S. Stackhouse Coal Co., Shickshinny ..	64,741
East Alden Mining Co., Nanticoke	31,440
Total	4,033,754

FIFTEENTH

G. B. Markle Co., Jeddo	1,786,192
Coxe Bros. & Co., Inc., Wilkes-Barre ..	1,124,653
Pardee Bros. & Co., Inc., Lat. Mines ..	589,063
Leh. Val. Coal Co., Wilkes-Barre ...	574,886
Upper Lehigh Coal Co., Hazleton ...	166,217
J. S. Wentz Co., Hazleton	85,246
Wolfe Collieries Co., Hudson	53,251
Harleigh-Brookwood Coal Co., Frackv. ..	50,016
East Point Coal Co., Scranton	33,281
M. S. Kemmerer & Co., Sandy Run..	10,358
Total	4,473,263

SIXTEENTH

Cranberry Creek C. Co., W. Hazleton ..	749,014
Leh. & Wilkes-Barre C. Co., W.-Barre ..	685,287

Company	Gross Tons
Leh. Valley Coal Co., Wilkes-Barre.	595,319
Coxe Bros. & Co., Inc., Wilkes-Barre.	343,808
C. M. Dodson Co., Bethlehem	282,929
Van Winkle Estate, Hazelton	179,147
Harwood Coal Co., West Hazelton.	166,768
Evans Col. Co., Beaver Mead.	48,037
Beaver Val. Coal Co., Baltimore, Md.	36,037
Thos. Reese, Audenreid	5,862
Total	3,041,608

SEVENTEENTH

Leh. C. & Nav. Co., Lansford	3,802,609
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EIGHTEENTH

Phila. & Read. C. & I. Co., Pottsville	1,396,173
Leh. Coal & Nav. Co., Lansford	449,896
Leh. Val. Coal Co., Wilkes-Barre	410,340
Mill Creek Coal Co., New Boston	301,982
Maryd Coal Co., Hazelton	283,522
St. Clair Coal Co., St. Clair	209,949
Alliance CM. Co., Hazelton	179,198
Port Carbon Coal Co., Pottsville	70,036
East Lehigh Coal Co., Tamaqua	69,845
Gorman & Campion Coal Co., Mahanoy City	39,319
Bergen Coal Co., Pottsville	18,629
Total	3,396,888

NINETEENTH

Lytle Coal Co., Minersville	311,490
Pine Hill Coal Co., New York, N. Y.	253,015
Phila. & Read. C. & I. Co., Pottsville	249,359
Buck Run Coal Co., Minersville	215,372
Oak Hill Coal Co., Minersville	173,822
Newcastle Coal Co., Minersville	160,669
White & Co., Pottsville	48,010
Ellsworth Coal Co., Minersville	25,881
Smaller operators	27,138
Total	1,464,751

TWENTIETH

Phila. & Read. C. & I. Co., Pottsville	2,448,327
Leh. Val. Coal Co., Wilkes-Barre	529,908
Total	2,971,235

Company	Gross Tons
TWENTY-FIRST	
Phil. & Read. C. & I. Co., Pottsville.	1,580,378
Leh. Valley Coal Co., Wilkes-Barre.	770,003
Locust Mt. Coal Co., Bethlehem	534,828
Susquehanna Col. Co., Wilkes-Barre.	278,372
Harleigh-Brookwood C. Co., Frackv.	212,721
Thomas Col. Co., Frackville	171,126
Girard Mammoth Coal Co., Mahanoy City	110,418
Cambridge Coal Co., Shenandoah	19,681
Total	3,677,527

TWENTY-SECOND

Phila. & Read. C. & I. Co., Pottsville	1,922,208
Leh. Valley Coal Co., Wilkes-Barre.	827,728
Harleigh-Brookwood C. Co., Frackv.	338,217
Midvalley Coal Co., Hazelton	273,981
East Bear Ridge Coal Co., Scranton	221,178
W. R. McTurk Coal Co., Girardville	117,687
Locust Dale Coal Co., Minersville	107,250
Laurel CM. Co., Mowry	15,818
Total	3,824,017

TWENTY-THIRD

Susq. Collieries Co., Wilkes-Barre	1,009,848
Phil. & Read. C. & I. Co., Pottsville.	673,137
Colonial Collieries Co., Frackville	273,104
Greenough Red Ash C. Co., Shamokin	203,849
Excelsior Coal Co., Shamokin	191,150
Enterprise Coal Co., Scranton	180,946
Evans Washery, Shamokin	74,223
Total	2,605,257

TWENTY-FOURTH

Phila. & Read. C. & I. Co., Pottsville	1,729,249
Susq. Collieries Co., Wilkes-Barre	524,262
Buck Ridge CM. Co., Shamokin	173,463
Treverton Colliery Co., Shamokin	159,229
Shipman Coal Co., Shamokin	138,032
Carbon Creek Coal Co., Shamokin	85,384
Total	2,769,719

TWENTY-FIFTH

Phil. & Read. C. & I. Co., Pottsville.	1,076,418
Susq. Collieries Co., Wilkes-Barre	756,689
Leh. Val. Coal Co., Wilkes-Barre	18,022
Total	1,851,129

COMPARATIVE YEARLY ANTHRACITE TONNAGES

The shipments (gross tons), not the entire production, for a series of years, are shown below:

Year	Tons	Year	Tons	Year	Tons
1902	31,200,890	1908	64,665,014	1914	*68,342,601
1903	59,362,830	1909	61,969,885	1915	67,883,776
1904	57,492,522	1910	64,905,786	1916	67,376,364
1905	61,410,201	1911	69,954,299	1917	77,133,305
1906	55,698,595	1912	*63,610,578	1918	76,749,919
1907	67,109,393	1913	*69,069,628	1919	66,900,462

* Does not include tonnage shipped over L. & N. E. R.R.

The complete record from 1820 will be found on page 154 of 1912 edition.

PROPORTIONS OF UNMINED ANTHRACITE

Estimates of the proportions of unmined anthracite held by the big producing companies still hark back to the figures made by William Griffith, a well-known mining engineer of Scranton, Pa., and published in the 'Bond Record'

nearly a quarter of a century ago. At that time, Mr. Griffith calculated how much coal was tributary to the lines of the railroad companies serving the hard coal regions. Aside from purchases made by the D. & H. interests about 15 years ago and the sale of the Pennsylvania R.R. interests in the Susquehanna collieries to M. A. Hanna & Co. in 1917, there has been little material change in the percentages arrived at by Mr. Griffith. The results of his studies as they appeared in the 'Bond Record' were as follows:

	Percentage of Allotment, 1896	Percentage of Future Supply Controlled
Delaware, Lackawanna & Western R.R. Co.	13.35	6.55
Delaware & Hudson Canal Co.	9.60	2.29
Erie & Wyoming Valley R.R. Co. (Penn. Coal Co.)	4.00	1.82*
Erie R.R. Co.	4.00	.77
New York, Ontario & Western Ry. Co.	3.10	.28
New York, Susquehanna & Western R.R. Co. ...	3.20	.54*
Delaware, Susquehanna & Schuylkill R.R. Co.	3.50	1.38†
Pennsylvania R.R. Co.	11.40	6.24**
Central R.R. of New Jersey	11.70	17.30††
Lehigh Valley R.R. Co.	15.65	16.87
Philadelphia & Reading R.R. Co.	20.50	42.25
Uncontrolled tonnage ....	.....	3.71

*Now Erie R.R.

†Coxe Estate, now controlled by Lehigh Valley Coal Co.

**Now controlled by M. A. Hanna & Co.

††Includes Lehigh Coal & Navigation Co., which now handles part of this tonnage over affiliated road.

Percentage allotments are, of course, a thing of the past.

GIRARD ESTATE PRODUCTION AND SHIPMENTS

The 1919 report of James Archbald, mining engineer and agent of the Girard Estate, shows that, counting pea as small coal, the shipments of large and small coal from the Girard operations have been as follows:

	Large Coal		Small Coal	
	Tons	P. Ct.	Tons	P. Ct.
1919.....	1,511,243	55.81	1,196,711	44.19
1918.....	1,763,916	52.58	1,590,851	47.42
1917.....	1,825,762	55.80	1,446,450	44.20
1916.....	1,480,829	54.48	1,237,283	45.52
1915.....	1,145,941	58.42	815,622	41.58
1914.....	1,079,818	56.74	823,126	43.26
1910.....	1,096,574	58.37	782,056	41.63
1905.....	1,068,540	58.62	754,358	41.38
1900.....	627,093	57.41	465,263	42.59
1895.....	1,056,653	70.95	432,705	29.05
1890.....	1,042,215	79.37	270,881	20.63
1885.....	919,138	80.55	221,996	19.45
1880.....	1,104,097	88.21	147,588	11.79
1875.....	644,557	91.48	59,987	8.52
1870.....	455,168	96.43	16,830	3.57
1865.....	240,466	100.00	.....	.....
1863.....	40,789	100.00	.....	.....

Tonnage for 1900 curtailed by strike.

Excluding the coal reclaimed from the culm banks, the proportions of large and small coal have been as follows:

THE COAL TRADE

	Large Coal		Small Coal	
	Tons	P. Ct.	Tons	P. Ct.
1919.....	1,415,478	64.08	793,503	35.92
1918.....	1,626,228	59.74	1,096,125	40.26
1917.....	1,671,089	61.01	1,068,143	38.99
1916.....	1,427,267	58.99	992,135	41.01
1915.....	1,125,503	61.46	705,652	38.54
1914.....	1,057,694	60.97	677,062	39.03
1910.....	1,080,600	63.61	618,188	36.39
1905.....	1,054,403	62.99	619,588	37.01
1900.....	625,422	63.31	362,227	36.69
1897.....	852,895	70.71	353,213	29.29

Tonnage for 1900 curtailed by strike.

COAL RECLAIMED FROM CULM BANKS

Year	Tons	Cwt.	Per Cent. of Total Shipment	Year	Tons	Cwt.	Per Cent. of Total Shipment
1889.....	1,309	08	.10	1907.....	201,546	03	9.66
1890.....	6,907	08	.53	1908.....	247,635	03	12.63
1891.....	4,504	08	.31	1909.....	147,730	02	8.40
1892.....	461	04	.03	1910.....	179,842	04	9.57
1897.....	17,891	11	1.46	1911.....	353,665	08	16.36
1898.....	34,027	13	2.83	1912.....	409,907	13	20.86
1899.....	24,215	00	1.99	1913.....	204,152	08	10.32
1900.....	104,707	04	9.59	1914.....	168,187	00	8.84
1901.....	161,605	00	12.95	1915.....	130,408	08	6.65
1902.....	177,855	07	27.96	1916.....	298,709	10	10.99
1903.....	464,931	15	30.68	1917.....	532,979	16	16.29
1904.....	245,891	12	14.85	1918.....	692,414	08	18.85
1905.....	148,906	04	8.17	1919.....	498,973	10	18.43
1906.....	202,203	12	11.82	Total.....	5,601,568	19	.....

DISTRIBUTION OF ANTHRACITE

Normal distribution, including about 10,000,000 tons used at the mines, is as follows:

Middle States: Pennsylvania, New York and New Jersey	58.9
New England States	15.5
South Atlantic and Southern States: Alabama, Arkansas, Delaware, District of Columbia, Maryland, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Oklahoma, Tennessee, Virginia and West Virginia	2.4
North Central States: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Ohio, Wisconsin	11.8
Western States: California, Colorado, Idaho, Montana, Oregon, Washington, Wyoming	Slight
Used for railroad fuel	7.0
Exported to Canada and other countries	4.4

This table of normal distribution, it should be noted, covers all coal.

Anthracite distribution during the coal year of 1918-19 was under the jurisdiction of the Anthracite Committee of the United States Fuel Administration. The chairman of this committee was Joseph B. Dickson, of Dickson & Eddy, and his associates were S. M. Warriner, Lehigh Coal & Navigation Co., and W. J. Richards, Philadelphia & Reading Coal & Iron Co. W. T. Grier was secretary of the committee.

This committee, in consultation with the railroads, operators, state and national officials and the coal men, determined a general allotment of anthracite production by states. The distribution of the tonnage within the states was left to the direction of the various Federal Fuel Administrators. The general distribution of domestic sizes as fixed by the committee and announced late in May, 1918, as compared with the actual distribution in 1916-17 (used as a base as being more nearly normal than the year following) is shown in the tables following:

	1916-17 Distribution	Allotment 1918-19	Per cent. Increase	Per cent. Decrease
NEW ENGLAND:				
Maine	556,683	660,000	18.56	
New Hampshire	314,945	375,000	19.07	
Vermont	316,850	330,000	4.15	
Massachusetts	5,027,993	5,689,000	13.15	
Rhode Island	664,008	800,300	20.53	
Connecticut	1,952,900	2,476,700	26.82	
Total New England.	8,833,379	10,331,000	16.95	
ATLANTIC STATES:				
New York	14,169,809	15,855,300	11.89	
New Jersey	4,961,622	5,460,784	10.04	
Pennsylvania	6,815,650	8,059,700	18.25	
Delaware	223,503	245,853	10.00	
Maryland	933,889	1,027,317	10.00	
District of Columbia	517,760	665,800	28.59	
Virginia	256,000	102,400		60.00
Total Atlantic States.	27,878,233	31,417,154	12.69	
CENTRAL STATES:				
Ohio	585,626	246,250		57.95
Indiana	710,274	284,110		60.00
Illinois	2,215,122	1,750,585		20.97
Michigan	1,589,002	1,201,000		24.42
Total Central States.	5,100,024	3,481,945		31.73
NORTHWEST:				
Minnesota	1,071,532	900,000		7.61
Wisconsin	1,181,926	1,024,000		13.36
North Dakota	249,314	200,000		19.78
South Dakota	207,416	166,000		19.97
Total Northwest	2,710,188	2,380,000		12.18
TRANS-MISSISSIPPI:				
Missouri	129,289			100.00
Kansas	15,907			100.00
Nebraska	130,273			100.00
Iowa	352,496			100.00
Total Trans-Miss. ...	627,965			100.00
RECAPITULATION				
New England	8,833,379	10,331,000	16.95	
Atlantic States	27,878,233	31,417,154	12.69	
Central States	5,100,024	3,481,945		31.73
Northwest	2,710,188	2,380,000		12.18
Trans-Mississippi	627,965			100.00
Twenty-four States	137,966			100.00
Railroad Supply	2,481,754	2,481,754		

Canada	3,856,021	3,602,000	6.59
Miscellaneous Exports	51,930	51,930	
Army and Navy Camps and Cantonments		600,000	
Total	51,677,460	54,345,783	5.16 9.00

Details of the allotments made by Federal Fuel Administrators to communities within their states were shown at length in the summaries published in the 46th annual edition (1919) of *THE COAL TRADE*, pp. 123-127.

OLD COMPANY'S (L. C. & N.) TONNAGE

The commercial coal tonnage of recent calendar years (less coal consumed by company, lessees or controlled interests) compares as follows:

Gross Tons	1915	1916	1917	1918	1919
Produced by L. C. & N. Co. . .	3,595,365	3,430,628	4,613,356	4,729,081	3,876,074
Produced by lessees	171,287	223,821	285,068	276,196	232,894
* Produced by Alliance CM. Co. .	194,331	138,920	242,054	198,881	249,013
Totals	3,960,983	3,793,369	5,140,478	5,204,158	.....

* Including Alliance tenants.

The following statement shows the time worked and the commercial coal produced by each of the company breakers in 1919, as compared with 1918:

Breakers	1919		1918	
	Working Time Hours	Tons	Working Time Hours	Tons
Nesquehoning	2,232½	811,965-11	2,373¾	939,570-15
Lansford	2,119½	764,122-08	2,377¾	881,562-14
Coaldale	2,196	811,204-02	2,412½	913,919-16
Greenwood	2,162¾	352,849-14	2,285¼	422,466-15
Rahn	2,117	426,518-13	2,362	455,855-17
Tamaqua	2,185¾	389,779-10	2,389½	400,685-08
Hauto Washery	1,735	202,011-08	4,328¾	407,148-15
Ashton Washery	1,265	117,622-05	2,462	307,870-18
Total	16,013	3,876,073-11	20,991½	4,729,080-18

Commercial production of the Cranberry Creek Coal Co. was 718,392 gross tons in 1919 and 629,173 gross tons in 1918.

Culm bank recoveries were as follows: Lehigh Coal & Navigation Co. and lessees, 624,641 gross tons in 1919 and 1,161,094 gross tons in 1918; Alliance Coal Mining Co. and tenants, 126,190 gross tons in 1919 and 108,366 gross tons in 1918; Cranberry Creek Coal Co., 43,310 gross tons in 1919 and 73,022 gross tons in 1918.

In 1919 the company shipped 104,142 gross tons of its product by canal, which was 6,241 tons less than in 1918.

POPULATION GROWTH IN ANTHRACITE TERRITORY

That the population of the industrial region in the anthracite consuming territory of the United States has during the past seven years increased by almost five million inhabitants, or about 15 per cent., is shown in the report of the Provost Marshal General to the Secretary of War on the selective-service act, 1917.

The following table shows the population of states in the industrial region of this country where the great bulk of anthracite is consumed, taken at the census of 1910, in comparison with the population of these states in 1917, as estimated in the above mentioned report:

	1910	1917		1910	1917
Connecticut	1,114,756	1,719,623	New Jersey	2,537,167	3,255,407
Delaware	202,322	234,710	New York	9,113,614	11,187,798
Dist. of Col.	331,069	346,856	Pennsylvania	7,665,111	8,981,082
Maine	742,371	646,588	Rhode Island	595,986	573,583
Maryland	1,295,346	1,292,091	Vermont	355,956	296,426
Massachusetts ...	3,693,310	3,939,561	Totals	28,077,580	32,877,609
New Hampshire. .	430,572	403,884	Total increase		4,800,029

These statistics clearly demonstrate one of the principal causes of the increased demand for anthracite. A more detailed table would probably show that the great percentage of the increased population had been drawn into the industrial region since 1914, through the industrial expansion during the war.

WHY INDEPENDENT ANTHRACITE COSTS MORE

Few actions of the United States Fuel Administration were more criticized than that which permitted the so-called independent anthracite producers to charge a differential of 75 cents per gross ton over the domestic prices fixed for the companies with closer railroad affiliations. To many, both within and without the trade, the reason for this differential has been a mystery. The explanation for the differential was the higher operating costs of the favored companies, which, it may be remarked in passing, both prior to and subsequent to the period of Fuel Administration control, at times have been able to overcome their disadvantages through the premium principle.

A general summary of the position of the independent operators, originally published in the Philadelphia *Public Ledger*, and reprinted from the 1918 edition of *THE COAL TRADE*, appears below:

"First. The companies came into the region at an early day and selected the best lands. The independents generally are working lands that were discarded by the companies as unprofitable (many of them leased from the companies, as they were thought by the latter undesirable for their own operating). In general, the independents' lands carry the thinnest veins, the most faulty ground, the smallest territories, the most old workings to be gone through, the heaviest royalties and the most difficult mining conditions in the anthracite regions.

"Second. Low costs depend greatly on large tonnages; in general the independent tonnages are small, not from lack of investment nor ability in operation, but solely from the conditions outlined above. The companies could do no better. Some of the larger independents formerly producing large tonnages and with expensive organizations and plants to maintain are facing the biggest kind of cost problems on account of dwindling tonnages owing to exhaustion of their lands.

"Third. The companies in general have not produced coal at a profit, relying on the profits of transportation, which have been large. Tonnage for the railroads has been their great consideration rather than profit on producing coal; the independent has no such advantage and must make a profit or go out of business."

ANTHRACITE PRICE CHANGES IN SEVENTEEN YEARS

In the closing years of the last century the anthracite coal trade was in a depressed condition. It being, as has so often been said, one of the last industries to recover from a period of depression, it was still suffering from the effects of the very unsatisfactory business years 1893-96.

Naturally, the miners and other employes of the producing companies felt the reflex action of this condition in a low rate of wages, and there were

few complaints, even among company officials, when the grievances leading up to the strike of 1900 were settled by a 10 per cent. increase after a brief period of suspension. That was naturally followed by an increase of 25 cents in the price of several of the sizes of coal.

Matters ran along on this basis for two years, when the miners again decided that they needed more money to put them on a satisfactory basis, and after the long-remembered strike of nearly six months' duration they again received a 10 per cent. increase. And on account of the increased cost of supplies and various other items of expense, and the severe competition of soft coal, which made an increase in the price of the steam sizes impracticable, it was necessary to increase the price of the domestic sizes 50 cents* a ton, this bringing about the familiar figure of \$5 as the standard price for stove coal in New York harbor.

PRACTICALLY NO CHANGES FROM 1902 TO 1912

As shown by the tabulation appearing below, this price remained unchanged for a long period of years:

TIDEWATER PRICES, WHITE ASH ANTHRACITE				
(Prices, except when otherwise stated, are as of December 1.)				
	Broken	Egg	Stove	Nut
1902.....	\$4.75	\$5.00	\$5.00	\$5.00
1903.....	No change.....			
1904.....	No change.....			
1905.....	No change.....			
1906.....	No change.....			
1907.....	No change.....			
1908.....	No change.....			
1909.....	No change.....			
1910.....	No change.....			
1911.....	No change.....			5.25
1912.....	5.00	5.25	5.25	5.50
1913.....	Tax law added 10 cents			
1914.....	No change			
1915.....	No change			
1916.....	4.90†	5.40	5.65	5.70
1917.....	6.40	6.30	6.55	6.65
1917**.....	6.35	6.25	6.50	6.60
1918††.....	7.80	7.70	7.95	8.05
1919.....		8.20	8.45	8.55
1920‡.....	9.20	9.20	9.55	9.55

*The 1901 circular price on above was \$4.65; this allowing a 15-cent commission, or discount, to rather a numerous class of buyers. New prices were net. As a matter of fact, therefore, average increase would be somewhat less than 50 cents.

†Broken, not now subject to discount.

**Prices on company coal in New York harbor, exclusive of rescreening charge, but including 35 cents wage advance of November, 1917.

††Includes \$1.05 wage advance allowance of December 1, 1918, and 40-cent freight rate increase June 28, 1918.

‡As announced by certain companies May 1, 1920; the 1917-20 prices do not include the "independent differential."

The 1902 prices shown in the preceding tabulation became effective on October 24. In the fall of 1911 there was an increase in the price of chestnut, but this was by no means universal, and it was not until June 1, 1912, following a period of suspension in mining activity that the new rates went into effect, making the first real change in a decade. During the interval, other necessities of life were rising in cost, and it was only the fixed price policy of the large producers that gave the anthracite industry stability.

Perhaps the best evidence of the reasonable character of the anthracite schedule was given in the summer of 1917 when the government maxima fixed by President Wilson proved to be practically the company circular prices then in effect, while the independent producers were permitted to charge 75 cents per ton more.

ANTHRACITE SHIPMENTS BY RAILROAD ROUTES

Shipments over the lines of the hard coal carriers in 1919 and four years previous in gross tons were as follows:

Companies	1915	1916	1917	1918	1919
Phila. & Reading	11,488,444	12,842,731	14,910,240	14,837,395	12,289,893
Lehigh Valley	12,932,526	12,056,078	13,969,507	14,277,325	12,003,687
Central R.R. of N. J.	8,017,816	†7,135,544	‡8,286,640	*7,124,551	5,941,412
Del., Lack. & West.	9,579,053	10,638,500	12,409,120	11,884,669	10,299,834
Delaware & Hudson	8,016,988	7,095,297	8,533,716	8,914,684	8,087,362
Pennsylvania	6,124,596	5,841,475	5,610,846	5,578,207	4,801,453
Erie	7,874,062	7,718,089	8,841,894	8,641,572	7,311,009
N. Y., Ont. & West.	2,088,577	1,945,030	2,010,724	2,033,388	1,882,601
Lehigh & New England..	1,761,714	†2,653,964	‡3,949,172	*3,812,753	3,232,450
Totals	67,883,776	67,376,364	77,133,305	76,749,919	64,849,701
†550,344 tons reported by both companies in 1916; ‡1,888,554 tons in 1917; *354,625 tons in 1918.					

CENTRAL R.R. OF NEW JERSEY ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	704,491	608,296	623,860	618,188	612,979	497,990
February	563,650	473,928	597,694	536,023	638,557	334,697
March	750,381	578,322	582,465	785,209	777,642	309,994
April	748,162	779,356	465,095	626,501	649,621	481,781
May	782,889	749,820	544,899	735,758	566,974	498,391
June	839,514	609,127	633,572	771,365	622,005	508,702
July	708,891	597,992	631,975	737,131	641,547	544,171
August	637,467	613,721	595,053	753,197	644,186	560,331
September	824,604	626,237	627,975	686,717	571,147	551,724
October	892,386	895,895	611,158	756,659	601,180	639,924
November ...	761,897	762,140	621,584	679,198	450,360	506,737
December ...	710,604	722,982	600,254	600,694	469,087	506,840
Total gross.	8,924,936	8,017,816	*7,135,544	†8,286,640	††7,124,551	5,941,412

* 550,344 tons; † 1,888,554 tons; †† 354,625 tons, also included in Lehigh & New England tonnage, this amount being reported by both roads.

DELAWARE & HUDSON CO. ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	586,893	623,947	626,959	667,035	636,875	717,045
February	442,378	544,325	609,325	482,638	600,799	629,929
March	446,135	617,605	490,453	728,857	861,253	671,829
April	615,573	642,913	575,786	639,495	771,553	603,479
May	663,648	677,108	677,405	774,278	825,990	667,227
June	661,248	697,894	580,046	818,337	773,691	661,991
July	671,682	697,803	601,087	758,695	820,530	731,385
August	619,062	731,137	572,822	781,606	846,788	716,333
September ...	647,974	737,592	551,665	698,731	736,497	553,149
October	678,104	701,279	589,636	813,429	739,495	797,041
November ...	638,892	694,386	628,239	786,381	624,335	663,782
December ...	641,952	650,999	591,874	584,234	676,878	674,172
Total gross.	7,313,541	8,016,988	7,095,297	8,533,716	8,914,684	8,087,362

DELAWARE, LACKA. & WESTERN ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	618,938	575,538	860,230	1,000,383	1,029,977	934,369
February	573,553	630,246	839,472	901,098	997,550	597,604
March	668,038	644,932	1,063,665	1,162,230	1,155,587	658,694
April	894,513	977,948	561,301	893,458	1,008,018	885,215
May	901,596	851,545	909,012	1,090,649	1,037,603	914,301
June	941,868	888,399	873,278	1,085,072	1,015,438	903,306
July	826,771	542,775	844,684	1,052,944	1,034,561	980,100
August	819,848	859,868	875,131	1,118,986	1,048,346	936,212
September ...	893,098	820,440	931,610	973,529	927,608	758,940
October	990,570	888,609	946,945	1,153,661	982,966	963,618
November ...	881,645	971,389	979,607	1,012,330	776,506	860,356
December	902,140	927,864	953,565	964,780	870,509	907,119
Total gross.	9,912,578	9,579,053	10,638,500	12,409,120	11,884,669	10,299,834

ERIE R.R. ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	706,303	577,007	666,994	683,047	632,332	687,241
February	533,307	535,883	699,700	637,325	614,210	371,033
March	660,924	593,250	741,714	792,453	864,968	451,572
April	648,426	737,548	572,843	664,609	695,186	581,453
May	702,892	610,305	665,883	786,995	761,436	621,326
June	738,175	693,089	666,529	807,047	756,257	616,939
July	717,201	660,010	618,917	768,245	824,242	663,421
August	734,350	690,817	658,044	812,114	847,169	678,437
September ...	727,950	718,751	498,631	717,129	705,363	640,444
October	773,866	708,007	623,383	793,226	731,694	698,613
November ...	622,154	696,890	674,261	720,308	554,026	620,703
December ...	703,037	652,505	634,190	659,396	656,689	679,827
Total gross.	8,268,539	7,874,062	7,718,089	8,841,894	8,641,572	7,311,009

LEHIGH & NEW ENGLAND R.R. ANTHRACITE SHIPMENTS

Month	1917	1918	1919	Month	1917	1918	1919
Jan. ...	284,021	268,364	295,233	Aug. ...	392,643	360,922	318,428
Feb. ...	225,944	286,147	188,249	Sept. ...	340,396	306,106	311,588
Mar. ...	323,157	356,888	129,751	Oct. ...	396,113	340,210	358,138
April ...	298,220	322,167	234,565	Nov. ...	362,202	271,504	314,193
May ...	352,920	339,459	254,940	Dec. ...	288,109	277,038	284,684
June ...	335,602	332,694	262,337	Total.	*3,949,172	†3,812,753	3,232,450
July ...	349,845	351,254	280,345				

Included in the above is *1,888,554 tons, †854,625 tons, which was transferred by this company to the Central R.R. of N. J. at Hauto, Pa., and is included in similar report of the latter company.

Shipments of anthracite over the Lehigh & New England R.R. during 1912, July to December, amounted to 995,245 tons. In 1913 shipments for the calendar year amounted to 703,699 tons, and in 1914 tonnage was 1,168,509 tons.

LEHIGH VALLEY R.R. ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	810,588	954,072	1,018,098	985,830	983,964	1,048,173
February	681,844	887,267	997,630	909,704	1,042,784	643,551
March	926,701	894,031	1,001,614	1,234,871	1,355,933	622,746
April	1,160,742	1,303,119	797,400	988,873	1,175,027	865,924

THE COAL TRADE

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Month	1914	1915	1916	1917	1918	1919
May	1,249,218	1,273,106	1,015,264	1,275,513	1,328,464	1,030,160
June	1,325,982	988,253	1,000,553	1,347,205	1,352,820	1,041,696
July	1,026,225	1,024,611	1,026,053	1,254,647	1,319,731	1,111,420
August	1,097,172	1,029,721	1,026,074	1,245,786	1,350,331	1,171,026
September	1,290,327	1,093,283	1,053,756	1,258,922	1,167,784	1,122,823
October	1,391,144	1,266,539	1,073,176	1,314,896	1,216,391	1,209,341
November ...	1,139,467	1,190,103	1,083,453	1,158,158	973,865	1,079,266
December ...	1,055,349	1,028,421	964,007	995,102	1,010,231	1,057,627
Total gross.	13,136,759	12,932,526	12,056,078	13,969,507	14,277,325	12,003,687

N. Y., O. & W. ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	197,275	183,718	175,020	164,675	171,667	156,328
February	153,826	137,341	135,896	143,711	177,047	108,029
March	191,030	151,820	152,958	185,496	199,680	88,116
April	199,659	215,963	150,543	145,179	185,650	144,856
May	198,762	164,819	161,342	179,386	177,072	167,403
June	207,931	140,239	154,089	181,965	186,948	167,327
July	202,362	201,910	163,590	168,915	167,656	176,524
August	191,622	131,987	190,779	186,679	170,313	182,450
September ...	185,045	159,163	175,329	155,886	157,187	176,492
October	214,752	209,127	132,291	179,403	165,205	187,926
November ...	206,068	202,266	162,257	161,615	124,700	161,385
December ...	204,149	190,124	147,007	157,814	150,063	171,465
Total gross.	2,352,486	2,088,577	1,945,030	2,010,724	2,033,388	1,882,601

PENNSYLVANIA R.R. CO. ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	536,118	451,200	640,908	458,896	458,408	442,059
February	426,100	372,374	504,332	428,230	459,271	273,031
March	585,190	544,023	581,845	517,704	519,806	338,977
April	619,158	647,396	381,505	433,314	448,374	383,250
May	579,869	508,272	478,602	498,052	493,380	401,918
June	470,652	446,690	482,239	500,037	482,737	372,658
July	406,760	369,550	440,521	510,941	504,630	433,517
August	497,579	426,818	482,416	504,819	504,367	438,214
September ...	575,898	467,587	480,266	422,482	433,068	431,514
October	611,593	637,052	480,920	430,662	393,885	465,544
November ...	595,819	616,190	438,869	457,970	364,193	406,606
December ...	530,200	637,445	449,052	447,739	416,088	414,155
Total gross.	6,434,937	6,124,596	5,841,475	5,610,846	5,578,207	4,801,453

PHILADELPHIA & READING ANTHRACITE SHIPMENTS

Month	1914	1915	1916	1917	1918	1919
January	1,015,126	760,757	1,106,899	1,150,147	932,146	1,155,803
February	746,793	693,743	1,074,148	966,725	1,107,982	725,809
March	936,304	961,415	1,237,378	1,374,051	1,339,051	617,229
April	1,185,930	1,181,959	854,005	1,004,028	1,223,512	1,044,192
May	1,202,679	962,986	963,385	1,341,587	1,356,878	1,156,119
June	944,816	852,411	1,087,183	1,341,370	1,345,079	1,084,635
July	831,965	839,554	999,736	1,256,316	1,420,624	1,131,451
August	904,643	847,262	1,000,667	1,373,473	1,408,501	1,142,714

Month	1914	1915	1916	1917	1918	1919
September ...	1,101,296	895,718	1,071,303	1,246,100	1,231,435	1,140,727
October	1,092,056	1,199,284	1,206,570	1,425,265	1,115,340	1,240,001
November ...	1,082,344	1,163,851	1,200,814	1,329,259	1,137,170	1,358,643
December ...	954,827	1,129,504	1,040,643	1,101,919	1,209,677	1,442,571
Total gross ..	11,998,779	11,488,444	12,842,771	14,910,240	14,837,395	12,289,893

CENTRAL R.R. OF NEW JERSEY ANTHRACITE TONNAGES

Received from	1915	1916	1917	1918	1919
Wyoming region	4,894,394	4,333,306	4,814,833	4,600,824	4,206,880
Upper Lehigh region	323,102	297,611	356,654	329,090	190,332
Beaver Meadow region	681,289	701,022	710,211	603,695	597,017
Beaver Brook region	191,377	201,221	197,233	240,468	272,174
Mauch Chunk region	1,894,844	1,885,037	2,136,924	974,782	739,346

D., L. & W. R.R. CO. COAL TRAFFIC

Operations of the Coal Department of the Delaware, Lackawanna & Western R.R. for the period 1915-19 show the following tonnages and distribution:

	1915	1916	1917	1918	1919
Connecting roads	478,926	808,567	977,998	2,426,275	1,675,050
Total coal carried	8,642,701	8,354,694	9,343,573	9,352,141	7,906,582

All the above amounts stated in gross tons.

Distribution	Gross tons	Gross tons	Gross tons	Gross tons	Gross tons
Sales at mines	95,384	102,801	111,973	121,992	98,963
Company's supply	1,297,046	1,377,144	1,698,576	1,071,850	777,929
D., L. & W. Coal Co.	7,720,714	8,388,352	9,747,927	9,656,892	8,404,005
Total sales	9,113,144	9,868,297	11,558,476	10,850,734	9,280,897
Coal on hand Jan. 1 ..	94,392	131,761	87,610	29,563	24,909
Coal on hand Dec. 31 ..	131,761	87,610	29,563	24,909	31,966

In conformance with the decision rendered by the United States Supreme Court that common carriers subject to the Act to Regulate Commerce can not lawfully transport coal owned by themselves in interstate commerce, the sales division of the Coal Department of the D., L. & W. R.R. was discontinued August 1, 1909, and a coal selling company was organized under the laws of New Jersey.

Next to the railroads, the iron and steel industry is the largest consumer of coal. Every ton of semi-finished steel that is turned out represents the consumption of three tons of coal, either in the raw form or as coke, and still more fuel is used in converting a portion of this steel into highly finished products.

THE COKE INDUSTRY IN 1919

The outstanding features of the coke industry during the year 1919 were the great slump in demand that followed the armistice and a remarkable increase in the proportion of by-product coke made as compared with beehive coke. According to preliminary estimates made by F. G. Tryon, of the United States Geological Survey, the total production of coke in 1919, including beehive and by-product but excluding gas-house coke, was 44,821,000 net tons, a decrease, as compared with 1918, of 11,657,000 tons, or 20.6 per cent. The decrease was confined almost entirely to beehive coke, the production of which fell off 36 per cent. The output of by-product coke decreased only 3.2 per cent. The output of by-product coke consequently exceeded that of beehive coke for the first time.

In 1918 about 46 per cent. of the total coke made in the United States was produced in by-product ovens and 54 per cent. in beehive ovens. In 1919 the proportions were reversed, 56 per cent. coming from by-product and only 44 per cent. from beehive ovens. The year 1919 thus marked a turning point in the history of coke manufacture in the United States.

The quantity of coke manufactured in 1919 at illuminating-gas plants, not included in the figures given above, was about 3,200,000 tons. The total quantity of coke produced in 1919 was therefore about 48,000,000 tons. These figures are preliminary only. Those for beehive coke are estimated from shipments by rail. Those for by-product coke are based on reports collected from producers in a preliminary canvass.

BEEHIVE COKE

The blast furnaces are the great customers of the coke industry. In 1918, according to the statistical report of the American Iron and Steel Institute for 1918, they consumed 45,704,000 net tons of coke, or 81 per cent. of the total output of beehive and by-product coke combined. In 1919 the production of pig iron fell off 22 per cent. and the demand for coke declined in proportion. The reaction was especially felt by the producers of beehive coke. With the growth in the output of by-product coke the beehive coke industry is likely to become more and more an auxiliary source of supply, carrying the peak load in times of extreme activity and correspondingly restricted in times of depression. This fact makes the current output of beehive coke a highly sensitive business barometer.

Table 1 shows in parallel columns the monthly output of pig iron and of beehive coke in 1919. The post-war slump in the demand for both began to be seriously felt about March 15. The low point for the year was reached in May. Thereafter production slowly recovered, only to be further interrupted by the steel workers' strike, which began September 22, and the coal strike of November 1 to December 10.

TABLE 1. *Estimated Monthly Production of Beehive Coke and of Pig Iron in the United States in 1919*

Month	Beehive coke Net tons	Pig iron* Gross tons	Month	Beehive coke Net tons	Pig iron* Gross tons
Monthly av., 1918	2,540,000	3,255,000	July	1,482,000	2,424,000
January	2,384,000	3,306,000	August	1,699,000	2,742,000
February	1,787,000	2,948,000	September	1,755,000	2,481,000
March	2,091,000	3,088,000	October	1,521,000	1,864,000
April	1,343,000	2,474,000	November	1,647,000	2,407,000
May	1,103,000	2,108,000	December	1,690,000	2,630,000
June	1,148,000	2,114,000	Total	19,650,000	30,586,000

*Figures for 1918 quoted from American Iron and Steel Institute; those for 1919 from *Iron Trade Review*.

As a result the production of beehive coke fell off 10,831,000 tons, or 36 per cent., from 1918 to 1919. The total output in 1919 is estimated at 19,650,000 net tons (Table 2). All districts shared in the decrease. The production in Pennsylvania and Ohio is placed at 14,861,000 tons, as compared with 22,276,000 tons the year before.

TABLE 2. *Estimated Production of Beehive Coke, by Groups of States, in 1919, with Comparative Figures for 1918*

	1918* Net tons	1919† Net tons
Pennsylvania and Ohio	22,276,000	14,861,000
West Virginia	2,717,000	1,061,000

Alabama, Tennessee and Georgia . . .	2,042,000	1,695,000
Virginia and Kentucky	1,535,000	1,201,000
Colorado, Oklahoma and New Mexico	1,401,000	558,000
Washington and Utah	510,000	274,000
United States	30,481,000	19,650,000

*Final figures. †Estimates.

BY-PRODUCT COKE

The total output of coke produced in by-product ovens in 1919 was 25,171,000 net tons, a decrease, as compared with 1918, of 827,000 tons, or 3.2 per cent. The effect of the decline in demand for by-product coke upon production was largely counteracted by the completion of new plants. The rate of production was higher during January, February and March than during the remainder of the year.

TABLE 3. *Rate of Production of By-Product Coke per 30-Day Month in 1919*

	Net tons
First quarter	2,260,000
Last three-quarters	2,043,000
Year	2,098,000

The dull season in the steel industry was most pronounced from April to July. During the last quarter of the year the by-product coke industry suffered from the combined effects of the steel strike, which restricted the demand, and of the coal strike, which curtailed the supply of coal.

The output by states is given in Table 4. The figures show a general decrease as compared with 1918, which affected all states except New Jersey, Ohio and Pennsylvania. The producers in Ohio reported an increase of four per cent. A larger increase (16 per cent.) was made in New Jersey, and the largest of all in Pennsylvania, where the completion of new ovens caused an increase of 25 per cent.

In order of rank Pennsylvania came first, with 5,747,000 tons; Ohio second, with 5,445,000 tons, and Indiana third, with 3,691,000 tons. Pennsylvania has thus regained the first place as a producer of by-product coke, a position held by that state from 1915 to 1917 but lost to Ohio in 1918. Pennsylvania is now supreme in the coke industry. It is not only the largest producer of both beehive and by-product coke, but it supplies much of the coal consumed by by-product ovens in other states.

TABLE 4. *By-Product Coke Produced in 1918 and 1919, by States, with Increase or Decrease*

States	1918		1919		Increase or Decrease	
	No. of ovens	Net tons produced	No. of ovens	Net tons produced	Net tons	Per cent.
Alabama	847	2,634,451	906	2,255,000	— 380,000	— 14
Colorado	120	*	120	*	*	*
Illinois	626	2,285,610	714	1,705,000	— 581,000	— 25
Indiana	1,026	3,898,215	1,216	3,691,000	— 207,000	— 5
Kentucky	108	517,749	108	408,000	— 110,000	— 21
Maryland	180	474,368	360	356,000	— 118,000	— 25
Massachusetts	400	556,397	400	393,000	— 163,000	— 29
Michigan	269	*	389	*	*	*
Minnesota	220	784,065	220	586,000	— 198,000	— 25
Missouri	56	*	56	*	*	*
New Jersey	260	682,148	315	789,000	+ 107,000	+ 16
New York	615	1,069,587	591	751,000	— 319,000	— 30

States	1918		1919		Increase or Decrease Net tons Per cent.	
	No. of ovens	Net tons produced	No. of ovens	Net tons produced		
Ohio	1,658	5,226,334	1,608	5,445,000	+ 219,000	+ 4
Pennsylvania	2,368	4,586,981	2,846	5,747,000	+1,160,000	+ 25
Rhode Island			40	*	*	*
Tennessee	24	124,469	24	105,000	— 20,000	— 16
Washington	20	30,129	20	28,000	— 2,000	— 7
West Virginia	214	603,393	214	393,000	— 210,000	— 35
Wisconsin	268	*	232	*	*	*
Combined States	†	2,523,684	...	2,519,000	— 5,000	— 0.2
Total	9,279	25,997,580	10,379	25,171,000	— 827,000	— 3

*Included in combined states. †Includes Colorado, Michigan, Missouri, Rhode Island and Wisconsin, combined to avoid disclosing operations of individual companies.

BY-PRODUCT OVENS COMPLETED IN 1919

In 1919 a total of 1,228 new by-product ovens were completed, of which 718 were new plants and 510 were extensions at existing plants. Pennsylvania put the largest number of new ovens in operation—478. Indiana came second with 190, and Maryland third, with 180. One new State, Rhode Island, entered the ranks of by-product coke producers in January, when the Providence Gas Co's plant was completed.

TABLE 5. *New By-Product Ovens Completed and Put in Blast in 1919*

New plants:

Company	Location of plant	No. of ovens	Type of ovens
International Harvester Co.	South Chicago, Ill.	88	Wilputte
Steel & Tube Co. of America	Indiana Harbor, Ind.	120	Semet-Solvay
Ford Motor Co.	Detroit, Mich.	120	Semet-Solvay
Jones & Laughlin Steel Co.	Pittsburgh, Pa.	240	Koppers
Rainey-Wood Coke Co.	Swedeland, Pa.	110	Koppers
Providence Gas Co.	Providence, R. I.	40	Koppers

Additions to existing plants:

Tennessee Coal, Iron & R.R. Co.	Fairfield, Ala.	77	Koppers
Citizens Gas Co.	Indianapolis, Ind.	40	Wilputte
Indiana Coke & Gas Co.	Terre Haute, Ind.	30	Koppers
Bethlehem Steel Corp.	Sparrows Point, Md.	*180	Koppers
Seaboard By-Product Coke Co.	Kearny, N. J.	55	Koppers
Carnegie Steel Co.	Clairton, Pa.	128	Koppers
Total		1,228	

*Completed but not put in blast.

During the year 128 ovens were abandoned or were so rebuilt as to be classed as new ovens.

BY-PRODUCT OVENS UNDER CONSTRUCTION JANUARY 1, 1920

Table 6 summarizes returns made to the United States Geological Survey from by-product operators on new ovens in construction at the beginning of 1920. In all 853 ovens are scheduled to come into operation by July 1, 1920. Of these ovens 247 are in Alabama, 220 in Pennsylvania, 210 in New York, and smaller numbers in Illinois, West Virginia, and Wisconsin. They are distributed among 11 projects, six of them new plants and five of them additions to existing plants.

TABLE 6. *By-Product Ovens Under Construction January 1, 1920*

Operator	Location of plant	No. of ovens	Type of ovens
Birmingham Coke & By-Products Co.	Birmingham, Ala.	50	Koppers
Sloss & Sheffield Steel & Iron Co.	Birmingham, Ala.	120	Semet-Solvay
Tennessee Coal, Iron & R.R. Co.	Fairfield, Ala.	77	Koppers
St. Louis Coke & Chemical Co.	Granite City, Ill.	80	Roberts
Donner-Union Coke Corp.	South Buffalo, N. Y.	150	Koppers
Lackawanna Steel Co.	Lackawanna, N. Y.	60	Semet-Solvay
Cambria Steel Co.	Johnstown, Pa.	60	Camb.-Belg'n
Jones & Laughlin Steel Co.	Pittsburgh, Pa.	60	Koppers
Pittsburgh Crucible Steel Co.	Midland, Pa.	100	Koppers
Domestic Coke Corp.	Fairmont, W. Va.	60	Koppers
Steel & Tube Co. of America	Mayville, Wis.	36	United-Otto
Total		853	

The completion of these projects will mean an increase of eight per cent. in the total number of by-product ovens in the country. Construction is more active now than in the years immediately before 1914, when the European war began, but is less active than it was during the war. Much of the construction now under way was projected before the armistice. The number of by-product ovens under construction in recent years has been as follows:

TABLE 7. *By-Product Ovens in Construction, 1914-1920*

January 1, 1914.....	504	January 1, 1917.....	2,084
January 1, 1915.....	644	January 1, 1918.....	2,260
January 1, 1916.....	1,191	January 1, 1919.....	1,815
January 1, 1920.....	853		

TYPES OF OVENS

The following table shows the number of ovens of each type in existence on January 1, 1920, the number on January 1, 1919, and the number now under construction. Of the ovens put in operation in 1919, 860 were of the Koppers type, 240 were Semet-Solvay, and 128 were Wilputte.

TABLE 8. *Ovens in Use at Beginning and End of 1919, and Building January 1, 1920, by Type*

	In existence January 1, 1919	In existence January 1, 1920	Building January 1, 1920
Koppers	4,829	5,659	497
Semet-Solvay	2,035	2,275	180
United-Otto	1,840	1,754	36
Rothberg	281	257	...
Wilputte	78	206	...
Cambria-Belgian	90	90	60
Gas Machinery	60	60	...
Klönne	42	42	...
Roberts	24	24	80
Piron .....	...	12	...
Total	9,279	10,379	853

PLANT CAPACITY FOR THE MANUFACTURE OF BY-PRODUCT COKE

The capacity of a coke oven naturally depends upon the number of hours adopted as standard coking time. The maximum capacity of the by-product plants of the country, defined as "the maximum quantity of coke of the grade desired by the operator which can be produced when all conditions are favorable, with all ovens active," has been as follows:

TABLE 9. *Maximum Capacity of By-Product Coke Ovens in the United States, 1918-1920, in net tons per annum*

January 1, 1918.....	27,000,000
January 1, 1919.....	33,700,000
January 1, 1920.....	39,500,000

In the year 1918 there was thus an increase in the annual capacity of coke ovens amounting to 6,700,000 tons, or 25 per cent. The increase during the year 1919 was somewhat smaller, 5,800,000 tons, or 17.2 per cent.

The annual capacity of the plants completed and in operation at the beginning of 1920, including ovens temporarily idle, was 39,500,000 net tons. This figure represents the output at full capacity—operation of 100 per cent. In actual practice an average operation above 90 per cent. can not be assumed for the country as a whole. Weekly reports received from the by-product plants during the war show that from December 28, 1917, to February 1, 1919, the highest percentage attained for the entire country was 92.2, the output reached in the week ended September 28, 1918. The average for the year 1918, when every effort was being made to speed up the recovery of by-products, was 86.9 per cent. of maximum capacity. The average for 1919 appears to have been about 70 per cent.

In estimating the coke or the by-products recoverable from the country's existing by-product ovens the assumed percentage of operation should therefore not exceed 90 per cent. Indeed, the safer figure of 85 per cent. would appear better justified by experience. The present capacity of the by-product ovens of the country in net tons per annum would therefore be that shown in Table 10, the yield of coke from coal being taken as 71.2 per cent., the average for 1917-18.

TABLE 10. *Capacity of By-Product Coke Ovens in 1920*

	Coke	Coal for charge
Assuming 90 per cent. operation.....	35,500,000	49,800,000
Assuming 85 per cent. operation.....	33,600,000	47,100,000

The completion of the plants now under construction may raise the capacity to a maximum of approximately 43,300,000, or 36,800,000 tons under an operation of 85 per cent. In connection with the supposition that a limit to the production of by-product coke may be reached, it may be noted that this quantity is 65.2 per cent. of the coke produced in 1918, the largest quantity ever used by the country in one year. It is 69 per cent. of the coke required for producing 49,666,000 gross tons of pig iron, the annual capacity of the coke-burning blast furnaces completed or building on January 1, 1919, according to the annual statistical report of the American Iron and Steel Institute, the coke consumption being taken at 2,375 pounds per gross ton of iron. It is 61.7 per cent. of the country's total requirements for coke in the war year 1918, as estimated by the United States Fuel Administration, less sales of gas-house coke, amounting to 1,814,000 tons.

RECOVERY OF BY-PRODUCTS

Final statistics showing the quantity and value of by-products recovered in 1919 are not yet available, but an idea of the quantity may be obtained by multiplying the number of tons charged into the ovens in 1919 by the average quantity of by-products recovered in 1918 per ton.

TABLE 11. *Average Recovery Per Net Ton of Coal Charged Into By-Product Ovens in 1918*NH₃ (all forms) expressed in terms of

equivalent ammonium sulphate	Pounds	18.9
Tar	Gallons	7.1
Crude light oil	Gallons	2.4
Gas	M cubic feet	10.4

The figures, if multiplied by the 35,353,000 net tons of coal charged in 1919, as estimated from known coke production on yield of 71.2 per cent., the average for 1917-1918, would give 668,200,000 pounds of ammonium sulphate or its equivalent, 251,000,000 gallons of tar, 84,800,000 gallons of crude light oil, and 367,700,000 cubic feet of gas.

For purposes of comparison the actual production of by-products in 1918 is reprinted below:

TABLE 12. <i>By-Products Obtained from Coke-Oven Operations in 1918</i>			
Product		Production	Sales Value of sales
Tar	gallons	263,299,470	200,233,002 \$6,364,972
Ammonia:			
Sulphate	pounds	436,388,134	423,515,836 19,061,777
Liquor	gallons	.....	.....
Anhydrous or free ammonia *	pounds	65,230,159	61,442,933 7,381,174
Gas:			
Illum. and household purposes	M cu. ft. }	385,035,154 }	33,437,991 7,130,113
Industrial purposes	" }		124,920,488 6,569,402
Benzol products:			
Crude light oil	gallons	87,222,450	3,764,272 963,042
Secondary light oil	"	339,644	121,191 15,472
Benzol	"	44,804,900	43,441,980 11,966,367
Toluol	"	8,861,948	8,541,366 12,249,702
Solvent naphtha	"	3,540,162	3,123,815 439,983
Other oils	"	636,707	571,752 53,880
Crude naphthalene	pounds	10,614,799	10,403,758 287,581
Refined naphthalene	"	5,472,699	5,486,689 362,648
Other products †			1,756,345
Total			\$74,602,458

*Includes liquor and sulphate sold by pound of NH₃.

†Includes sodium ferro cyanide, pyridin oil, hut coke, drip oil, spent oxide, residue, coal-tar paint and wash oil.

‡Does not include value of 1,999,370 net tons of coke breeze.

If the figures showing the recovery of by-products per ton are multiplied by the number of tons given above as the annual coke capacity of the ovens now built and building in the United States, namely, 36,800,000 tons—a moderate estimate assuming 85 per cent. operation—the annual capacity for the recovery of by-products by the end of 1920 will become 977,100,000 pounds of ammonium sulphate, or its equivalent, 367,000,000 gallons of tar, 124,000,000 gallons of crude light oil, and 537,300,000 cubic feet of gas.

The final figures on the production of coke in 1918, collected by the Geological Survey from producers, record an output of 56,478,372 net tons, of which 25,997,580 tons, or 46 per cent., were from by-product ovens and 30,480,792 tons were from beehive ovens. Total production increased 1.6 per cent. over 1917; by-product production increased 15.9 per cent.; beehive production decreased eight per cent. There were 8,904 by-product ovens in operation in 1918, an increase of 1,606 over 1917, and 61,317 beehive ovens active, a decrease of 7,370 compared with 1917.

Of the beehive coke produced, 23,171,627 tons were sold as furnace coke at an average of \$5.93 per ton, and 2,250,156 tons as foundry coke at an average of \$7.53 per ton.

In all, 84 per cent. of the beehive coke was sold and 16 per cent. used by the producer. By-product coke is largely consumed by the producer—68 per cent. of the output in 1918, compared with 32 per cent. sold. More than 2,500,000 tons of by-product coke were sold for domestic and other uses than furnace and foundry.

Beehive and By-Product Coke Produced in the United States in 1917 and 1918

State	Beehive Coke		By-Product Coke		Total coke Net Tons
	Active ovens	Coke produced Net Tons	Active ovens	Coke produced Net Tons	
Alabama	5,493	2,151,828	831	2,740,761	4,892,589
Colorado	2,867	1,112,449	...	...	1,112,449
Georgia	151	39,589	...	...	39,589
Illinois	...	...	619	2,289,833	2,289,833
Indiana	...	...	861	3,540,718	3,540,718
Kentucky	801	331,532	108	531,539	863,071
Maryland	...	...	120	518,810	518,810
Massachusetts	...	...	317	595,113	595,113
Michigan	...	...	258	*	*
Minnesota	...	...	152	490,272	490,272
Missouri	...	...	56	*	*
New Jersey	...	...	260	423,361	423,361
New Mexico	1,134	577,679	...	...	577,679
New York	...	...	615	993,184	993,184
Ohio	198	147,826	1,009	3,546,476	3,694,302
Oklahoma	...	...	...	...	...
Pennsylvania	44,534	23,816,420	1,629	4,095,605	27,912,025
Tennessee	1,266	376,080	12	35,246	411,326
Utah	726	†	...	...	†
Virginia	8,029	1,304,330	...	...	1,304,230
Washington	254	†471,187	5	26,346	†497,533
West Virginia	8,234	2,838,728	214	511,033	3,349,761
Wisconsin	...	...	232	*	*
Combined States	...	...	...	2,100,983	2,100,983
Total	68,687	33,167,548	7,298	22,439,280	55,606,828

*Included in combined states.

†Included with Washington.

‡Includes Utah.

1918

State	Beehive Coke		By-Product Coke		Total coke Net Tons
	Active ovens	Coke produced Net Tons	Active ovens	Coke produced Net Tons	
Alabama	5,570	1,717,721	807	2,634,451	4,352,172
Colorado	1,431	*	120	*	989,447
Georgia	101	22,048	...	...	22,048
Illinois	...	...	605	2,285,610	2,285,610
Indiana	...	...	945	3,898,215	3,898,215
Kentucky	798	301,036	108	517,749	818,785
Maryland	180	474,368	474,368
Massachusetts	400	556,397	556,397

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State	Beehive Coke		By-Product Coke		Total coke Net Tons
	Active ovens	Coke produced Net Tons	Active ovens	Coke produced Net Tons	
Michigan .....	...	...	269	*	*
Minnesota .....	...	...	214	784,065	784,065
Missouri .....	...	...	56	*	*
New Jersey .....	...	...	260	682,148	682,148
New Mexico	1,053	597,072	...	...	597,072
New York .....	...	...	615	1,069,587	1,069,587
Ohio	198	*	1,610	*	5,365,243
Oklahoma	304	*	...	...	*
Pennsylvania	37,730	22,136,664	2,189	4,586,981	26,723,645
Tennessee	1,101	302,637	24	124,469	427,106
Utah	819	*	...	...	*
Virginia	3,135	1,234,256	...	...	1,234,256
Washington	250	93,659	20	30,129	123,788
West Virginia	8,827	2,716,613	214	603,393	3,320,006
Wisconsin .....	...	...	268	*	*
Combined States .....	...	1,359,086	...	7,750,018	2,754,414
Total	61,317	30,480,792	8,904	25,997,580	56,478,372

*Included in combined states.

†Included with Washington.

‡Includes Utah.

The average yield of coke from coal in 1917 was 63.48 per cent., while in 1918 it was 71.22 per cent. Figures for 1919 are not yet available.

COKE PRODUCED IN THE UNITED STATES

State	1913	1914	1915	1916	1917	1918
Alabama	3,323,664	3,084,149	3,071,811	4,298,417	4,892,589	4,352,172
Colorado	879,481	666,083	670,938	1,053,553	1,112,449	989,447
Georgia	42,747	24,517	20,039	47,127	39,589	22,048
Illinois	1,859,553	1,425,168	1,686,998	2,320,400	2,289,833	2,285,610
Indiana	2,727,025	2,276,652	2,768,099	3,489,660	3,540,718	3,898,215
Kentucky	317,084	443,959	526,097	802,526	863,071	818,785
Maryland .....	...	87,852	313,283	489,982	518,810	474,368
Massachusetts .....	...	540,631	504,438	563,048	595,113	556,397
Minnesota .....	...	...	127,847	431,319	490,272	784,065
New Jersey	255,792	255,283	†	†	423,361	682,148
New Mexico	467,945	362,572	389,411	502,812	577,679	597,072
New York	758,486	457,370	684,461	775,014	993,184	1,069,587
Ohio	351,846	521,638	684,658	1,803,268	3,694,302	5,365,243
Pennsylvania	28,753,444	20,258,393	25,622,862	31,279,695	27,912,025	26,723,645
Tennessee	364,578	264,127	256,973	382,175	411,326	427,106
Virginia	1,303,603	780,984	629,807	1,242,332	1,304,230	1,234,256
Washington	76,221	84,923	*136,552	*534,653	*497,533	123,788
West Virginia	2,472,752	1,427,962	1,391,446	2,521,309	3,349,761	3,320,006
Other States	2,345,329	1,848,934	2,095,430	1,996,295	†2,100,983	††2,754,414
Total	46,299,530	34,555,914	41,581,150	54,533,585	55,606,828	56,478,372

*Includes Utah. †Included in other States. ‡Michigan, Missouri and Wisconsin. ††Michigan, Missouri, Oklahoma, Utah and Wisconsin.

Of the coke produced in 1918, 30,481,000 tons was produced in beehive ovens and 25,997,580 tons in by-product ovens. The 1919 production of beehive coke is estimated at 19,650,000 tons; by-product coke, 25,171,000.

The 1919 estimated production, according to figures of the United States Geological Survey, was as follows:

	Beehive Net Tons	By-Product Net Tons		Beehive Net Tons	By-Product Net Tons
Alabama	1,695,000†	2,255,000	New Jersey ....	.....	789,000
Colorado	558,000*	‡	New York ....	.....	751,000
Illinois .....	.....	1,705,000	Ohio	***	5,445,000
Indiana .....	.....	3,691,000	Pennsylvania ...	14,861,000**	5,747,000
Kentucky	1,201,000††	408,000	Tennessee	‡‡‡	105,000
Maryland .....	.....	356,000	Utah	274,000‡	.....
Massachusetts ..	.....	393,000	West Virginia ..	1,061,000	393,000
Michigan .....	.....	‡‡	Washington	¶	28,000
Minnesota .....	.....	586,000	Other States ...	.....	2,519,000
Missouri .....	.....	‡‡	Total	19,650,000	25,171,000

*Includes Oklahoma and New Mexico.

†Includes Tennessee and Georgia.

**Includes Ohio.

††Includes Virginia.

‡Includes Washington.

‡‡Included under "Other States."

***Included under Pennsylvania.

‡‡‡Included under Alabama.

¶Included under Utah.

The coke production of Kentucky amounted to 863,071 tons in 1917, as compared with 802,526 tons in 1916, according to the figures of the United States Geological Survey. The 1918 returns were 818,785 tons, with by-product in the lead. For 1919 the estimated production of by-product coke was 408,000 tons; state beehive production figures are not yet available. In 1917, the beehive output was 331,532 tons and the by-product 531,539 tons.

CONNELLVILLE COKE TRADE REVIEW FOR 1919

The Connellsville region's output of coke, shipped to consumers during the year 1919, decreased in tonnage and shrank in gross value to a more remarkable extent than during any year in the past 19, notwithstanding the average realized price per ton was the third highest in the history of the region.

With a marketed tonnage of 10,254,640, which yielded the producers \$48,196,808 in revenue, the slump in output, as compared with 1918, was 5,883,950 tons, or 36.4 per cent., and the decrease in value was \$68,807,969, or 58.8 per cent. In searching the records for similar annual tonnages we are obliged to go back to 1900 to find the next lowest total, the record of that year having been 10,166,234, or but 88,406 tons less than for 1919. The gross annual revenue is, however, found to have been exceeded in six different years, first in 1906, then in 1907, and again in 1913, 1916, 1917 and 1918.

In 1908 the output of 10,700,022 tons was 445,382 tons greater than in 1919, but at the very low average price of \$1.80 its value was but \$19,260,040, as compared with two and one-half times that amount in 1919. With output exceeding by 9,700,000 to 11,400,000 tons that of 1919, the revenue in 1906, 1907, 1913, 1916 and 1917 ranged from \$6,801,338 to \$63,091,823 greater, but between no two successive years has there been so pronounced a drop in gross values as between 1919 and 1918.

Compared with 1916, when the region's highest record of 21,654,502 tons was made, 1919 fell behind 11,399,862 tons, which loss was itself greater by 1,233,628 tons than the entire output of 1900. The decrease of

aggregate value in the history of the region, was greater than the gross \$68,807,969 in value in 1919, as compared with 1918, the year of greatest revenue of any year except 1917 and 1918.

Remarkable as was 1918 as the year of greatest revenue from its chief product and the year of the great war, in which the region played well its part, the year 1919 had some distinctions that set it apart from all that have preceded it. During no previous year was the burden laid so heavily upon the operators, nor for so long a time, to gauge production so as to keep it within reasonable and proper range of a shifting demand. For a single month at the beginning of the year the effort was directed toward meeting the urgent demands and the pressing needs of coke consumers. During much of the remainder of the year energy was directed in an opposite direction, with the complications of a strike in the steel industry to be dealt with, first as a retarder of furnace and mill activity, then, after its failure, to meet the growing demand of a revival. Upon the heels of this came the strike of mine workers in other regions which acted as a stimulant to coke and coal demand, but brought in its train a reimposition of war-time regulations with a new variation in the form of limiting coke output while swelling coal production. The settlement of the coal strike caused some new conditions, or more properly speaking the return of an old one which was readily recognized as car shortage. Demand for coke took on more activity and once more, and as the year was drawing to a close, there was need to apply pressure to increase production.

In preceding years the production of the region has been divided between the Connellsville and Lower Connellsville districts in proportions ranging from 52 to 54 per cent. for the former to 46 to 48 per cent. for the latter. In 1918 there was the nearer approach to equality, but for 1919 the trend was decidedly in the opposite direction, the Connellsville district's quota having been about 60 per cent. and that of the Lower Connellsville district only 40 per cent. This change is accounted for by the fact that a number of the plants in Lower Connellsville district were given over exclusively to the production of by-product coal throughout the year and others were proportionately heavier shippers of it during 1919 and 1918.

The estimated production of coke during 1919 in short tons by quarters in the two districts was as follows:

Quarter	Connellsville	Lower Connellsville	Total
First	1,787,487	1,242,558	2,980,045
Second	1,005,576	646,308	1,651,884
Third	1,717,945	1,074,518	2,792,463
Fourth	1,712,250	1,153,327	2,865,577
Totals	6,173,258	4,116,706	10,289,964

The comparative production by districts and months during the past two years is shown in the table following:

	Connellsville		Lower Connellsville		Total	
	1918 Tons	1919 Tons	1918 Tons	1919 Tons	1918 Tons	1919 Tons
January	584,992	652,820	436,063	571,400	1,021,055	1,224,220
February	551,185	527,183	440,686	363,789	991,871	890,972
March	745,202	557,484	691,619	807,419	1,436,821	864,903
April	776,174	402,837	683,074	242,191	1,459,248	645,028
May	824,748	280,113	707,886	190,362	1,532,634	470,475
June	758,731	322,626	679,969	213,755	1,438,700	586,381
July	822,262	466,008	755,868	294,487	1,578,130	760,475
August	740,667	634,843	751,398	376,044	1,492,065	1,010,887
September	700,826	617,094	722,410	404,002	1,423,236	1,021,096
October	699,812	396,681	710,591	302,475	1,410,403	699,156
November	588,240	694,066	548,115	446,043	1,136,355	1,140,109

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	Connellsville		Lower Connellsville		Total	
	1918 Tons	1919 Tons	1918 Tons	1919 Tons	1918 Tons	1919 Tons
Totals	8,392,881	6,173,258	7,687,709	4,116,706	16,080,590	10,289,964
Decrease from 1918		2,219,623		3,571,006		5,790,626
Average per month.	699,406	514,438	640,642	343,058	1,340,050	857,497
Decrease from 1918		184,969		297,584		482,553

One measure of the extent to which the increased production of by-product coke has cut into the business of the merchant beehive operators is found in the shift of percentage of production by the merchant and the furnace interests respectively. In 1918 the furnace ovens produced approximately 57 per cent. as compared with 43 per cent. by the merchant ovens. The decrease in the volume of merchant coke business in 1919 is reflected in the drop to 39.7 per cent. of the region's product as compared with 60.3 per cent. at the ovens of the furnace interests. The business was not wholly lost to the merchant operators, however, the decrease in coke being compensated by larger raw coal shipments.

The production by the respective interests by quarters in 1919, in short tons, is shown in the following tabulation:

Quarter	Merchant	Furnace	Total
First	1,164,085	1,815,960	2,980,045
Second	644,519	1,007,365	1,651,884
Third	1,099,267	1,693,191	2,792,458
Fourth	1,178,738	1,686,839	2,865,577
Totals	4,086,609	6,203,355	10,289,964

The comparative monthly production by interests for the past two years is shown in the table following:

	Merchant		Furnace		Total Tons	
	1918 Tons	1919 Tons	1918 Tons	1919 Tons	1918 Tons	1919 Tons
January	398,906	529,270	622,149	694,950	1,021,055	1,224,220
February	404,369	541,769	587,502	549,153	991,871	890,923
March	614,607	293,046	822,214	571,857	1,436,821	864,903
April	604,507	215,693	854,741	429,335	1,459,248	645,028
May	623,559	203,187	909,075	267,288	1,532,634	470,475
June	579,598	225,639	859,102	310,742	1,438,700	536,381
July	639,690	309,246	938,440	451,229	1,578,180	760,475
August	656,090	368,464	835,975	642,423	1,492,065	1,010,887
September	645,029	421,557	778,197	599,539	1,423,226	1,021,096
October	673,481	325,085	736,922	374,121	1,410,403	699,156
November	522,723	452,078	518,572	685,086	1,136,555	1,140,109
December	534,125	401,680	625,947	624,682	1,160,072	1,026,812
Totals	6,896,754	4,086,609	9,183,836	6,203,355	16,080,590	10,289,964
Decrease from 1918		2,810,145		2,980,481		5,790,626
Average per month.	574,729	340,550	765,319	516,946	1,340,050	857,497
Decrease from 1918		234,180		248,373		482,553

On December 31, 1918, there was approximately 10,000 tons of stock coke on the yards, chiefly at the furnace oven plants. This had been included in the record of production in that year but it did not reach the consumers until during the early months of this year. There having been stock estimated at 45,324 tons on the oven yards at the close of 1919, the tonnage moving to consuming markets during the years was 35,324 tons less than the estimated production for the year. The revenue of the producers for the year was therefore derived from only 10,254,640 tons, or the production, 10,289,964 tons, less the net tonnage.

CAR SHORTAGE PRONOUNCED NEAR CLOSE

It was not until late in the year when car shortage became quite pronounced that stock coke began to accumulate. During the period when the region was practicing self-imposed restrictions to adapt production to

demand there was more or less stock accumulation but the curtailment measures continued to be applied with such rigor that by the time the trade began to pick up in late August the yards had been stripped bare and were kept so until the settlement of the coal strike. The interference with the prompt movement of loads and empties which followed the demand for more general distribution of coal cars made it necessary for considerable coke to be stocked during the latter half of December. This was picked up at every opportunity but it was not possible to load it all out by the close of the year.

The progress of and the fluctuations in the coke trade of the Connellsville region, during the past 40 years, or since it assumed importance as an industry, is comprehensively shown in the following tabulation:

Year	Ovens	Tons Shipped	Average Price	Gross Revenue
1880	7,211	2,205,946	\$1.79	\$3,948,643
1881	8,208	2,689,002	1.63	4,301,573
1882	9,283	3,043,394	1.47	4,473,889
1883	10,176	3,552,402	1.14	4,049,738
1884	10,543	3,192,105	1.13	3,607,078
1885	10,471	3,096,012	1.22	3,777,134
1886	10,952	4,180,521	1.36	5,701,086
1887	11,923	4,146,989	1.79	7,437,669
1888	13,975	4,955,553	1.19	5,884,081
1889	14,458	5,930,428	1.34	7,974,668
1890	16,020	6,464,166	1.94	12,587,379
1891	17,204	4,760,665	1.87	8,903,454
1892	17,256	6,329,452	1.83	11,598,407
1893	17,513	4,805,623	1.49	7,141,031
1894	17,834	5,454,451	1.00	5,454,451
1895	17,947	8,244,438	1.23	10,140,658
1896	18,351	5,411,602	1.90	10,282,042
1897	18,628	6,915,052	1.65	11,409,835
1898	18,643	8,460,112	1.55	13,113,179
1899	19,689	10,129,764	2.00	20,259,528
1900	20,954	10,166,234	2.70	27,448,832
1901	21,575	12,609,949	1.95	24,589,400
1902	26,329	14,188,740	2.37	33,508,714
1903	28,092	13,845,230	3.00	40,085,906
1904	29,119	12,427,468	1.75	21,748,069
1905	30,842	17,896,526	2.26	40,446,149
1906	34,059	19,999,326	2.75	54,998,146
1907	35,697	19,029,058	2.90	55,184,268
1908	37,842	10,700,022	1.80	19,260,040
1909	39,158	17,785,832	2.00	35,571,664
1910	39,137	18,689,722	2.10	39,248,416
1911	38,904	16,334,174	1.72	28,094,780
1912	38,884	20,000,873	1.92	38,401,676
1913	39,067	20,097,901	2.95	59,288,808
1914	37,965	14,075,688	2.00	28,151,376
1915	38,986	17,921,216	1.80	32,258,188
1916	38,362	21,654,502	2.58	55,768,616
1917	38,110	17,806,181	6.25	111,288,631
1918	37,061	16,138,590	7.25	117,004,777
1919	35,768	10,254,640	4.70	48,196,808

Compared with 1918 there was a striking contrast in the conditions under which the region operated in 1919. During the preceding year every resource and energy of the trade was directed toward an increase in production. This pressure was maintained unceasingly throughout the year in order that the demands of a great nation engaged in a great war might be supplied without let or hindrance. During the year just closed there was a long period of strenuous effort, but it had for its purpose the orderly curtailment of production in conformity with a more or less constantly decreasing demand for the region's chief product. Only until late in the

year was there necessity for a speeding up which came as the result of the failure of the steel strike and increasing activity in iron and steel manufacture.

Following the withdrawal of price and distribution regulations on February 1 there was a downward sweep which did not reach the turning point until in May. The improvement which followed was so gradual that care was at all times required to hold production within the limits of trade requirements so as to avoid the accumulation of a surplus stock of coke. The steel strike in September obliged the coke producers to again tighten the reins. As the strike waned and the coal strike took its place as a disturbing factor in industry the coke demand showed improvement to meet which required some relaxation of the voluntary restriction measures. This order was followed during the months of November and December to the extent labor inefficiency and interruption to car supply permitted.

The removal of government control on February 1 was followed by a sharp falling off in demand. At that time the operators decided upon a course which was consistently pursued during the remainder of the year, to-wit: to meet the situation sanely and courageously by restricting production through reduced running time and blowing out of ovens rather than taking the risk of overstocking the market.

STABILIZATION SYSTEM SUCCESSFUL

This method of stabilizing the market continued in a systematic manner through February and March. By the middle of the latter month there had been a shrinkage of 755,000 tons, or 27 per cent., from the production during the week of January 25, from which the falling off dated. During April the downward trend was accelerated and to keep pace with it more ovens were added to the idle list, those then in blast being but 44.8 per cent. of the whole. By the middle of the month production had dropped to 150,145, a loss of 140,917 tons, or 48.4 per cent., in 12 weeks.

By the third week of April the region had been swept clear of coke accumulations and the operators felt that they had the better of the situation. The advent of May confirmed this belief, there having developed less need than earlier to curtail production. In the second week of the month the extreme low point in the operating curve was reached, only 30 per cent. of the region's ovens being in blast, the active list of the H. C. Frick Coke Co. numbering but 4,297 ovens, or 21.7 per cent.

The gauge of the market had thus been so closely applied that from this time forward there was an easement in curtailment measures. Additional ovens were fired up by the merchant operators and in the week of May 17 their production exceeded that of the furnace ovens for the first time in years, although total output of the region, 83,284 tons, was the smallest for an equal period of time. Throughout June there was an improvement in operating conditions but no new demand, except slightly larger requisitions on contracts. In the first week in July the furnace plants took on greater activity, 1,368 ovens being restored to running. The drop in production following July Fourth was scarcely noticeable. Larger demand from the United States Steel Corporation resulted in 3,227 ovens being fired up at Frick plants by the close of the month.

Beginning with August, the merchant operators marked time on coke production but increased their shipments of coal. In mid-August the strike of shopmen on the C. & O. R.R. diverted considerable coke business to the Connellsville region which created activity for a fortnight. It re-

ceded in part, upwards of 1,000 ovens having meantime been added to the active list. By the close of the month greater strength and gradual expansion was noticeable in the merchant trade, more than making good the decline in furnace oven operation. The week of September 6 registered the largest production, 263,742 tons, since the slump began January 25, but it was followed by a retrograde movement the next week. The inauguration of the steel strike September 22 hastened the contraction which continued week after week to a minimum of 152,764 tons during the week of October 11. Holding a firm grip on the situation there was an entire absence of the demoralization that was expected would ensue during the steel strike. Later in October and early November the waning of the strike and the gradual resumption of the furnaces caused a gradual return to near normal in coke production, the beehive oven position being strengthened through the buying by furnaces that had been deprived of by-product coal coming into the region for coke of the type they formerly used.

With the heavier calls for coke production grew apace during November but never to such point that it was not easily absorbed in the market. When the order came to curtail production 25 per cent. December 8, as a means of augmenting coal supply, the region fell in line. The lifting of this ban left an effect from which the region had not fully recovered by the close of the year, car shortage being more responsible than any other factor, although the desire of the workers to make Christmas celebration a memorable one as the last preceding the inauguration of the "dry" season January 16, helped considerably to hold down production.

The year closed with 63 per cent. of the ovens in blast, 69.2 per cent. at the merchant plants and 58.7 at the furnace plants. The average percentage active during the year was: Merchant 61.7; furnace 49.3.

Car supply developed extremes during the course of the year, part of the time being actually in excess of demands and later becoming very pronounced in its shortage. Between these limits there was all possible gradations, good, fair and poor.

Throughout January the supply was fairly good but not all that either producers or consumers of coke desired. With the falling off in coke demand which began about February and reached the low point early in May, the condition of the car supply was a matter of less concern in the trade than it had been previous to the suspension of price restrictions and other regulations. During this period, and well on into June, cars were sufficient to take care of the then very much curtailed coke production. But by the first week in July the situation had changed and a decided shortage developed, due to the number of "bad order" cars which had been permitted to accumulate throughout the country. Attention of the Railroad Administration having been rather vigorously called to this condition steps were taken to have these cars restored to service as rapidly as possible. By the second week of August there was a decided improvement in the supply of both coal and coke cars. Late in the month the distribution began to be less satisfactory, the supply for the coke region dropping to 30 or 40 per cent. of requirements. Early in September the coal car shortage, due in part to the rush of traffic to and from lake ports, became general on all the railroads.

By the middle of October coke car supply had risen to about 95 per cent. but coal cars were very much less plentiful. As the date of the threatened coal strike approached there was renewed activity in shipments which resulted in more insistent demand for cars. To meet the situation

the Railroad Administration issued an order giving coal cars the preference in movement. Under the stimulated demand for coal the car shortage became even more acute. After the powers to divert shipments had been passed from the Fuel to the Railroad Administration, following the inauguration of the coal strike, the steady accumulation of loaded cars at scale points and in yards subject to requisition by the Railroad Administration, had the effect of withdrawing hundreds of cars from service, again accentuating the shortage. This condition continued all through the month of November. Meantime the wide distribution of loaded cars, under diversion orders, scattered the rolling stock of the railroads to the four winds.

The settlement of the coal strike, which called for the return of cars to the mines in the strike zones caused a dearth of cars for distribution in the Connellsville region except for coke. At intervals these were furnished up to 98 per cent. of requirements, but coal cars dropped on some days to 20 to 30 per cent. The cold weather preceding and following Christmas retarded movement on the railroads, cutting down the number of cars to a train which, of course, prevented any improvement in the car situation. A few mild days brought temporary relief but the return of near zero weather at the close of the year restored what is always a very serious car supply handicap.

CONTROL WITHDRAWN; LATER REINSTATED

The price and zone regulations on coal and coke, which had been imposed as a war measure, were suspended February 1. When the coal strike began to assume an acute stage the Fuel Administration was ordered to function again, the first step taken being to transfer to the Railroad Administration the powers of the former relative to the diversion and distribution of coal. On November 26 an order was issued prohibiting the delivery of coal to any but the essential industries.

The emergency measure having the most pronounced effect upon the operation of the coke plants was the order issued by the Fuel Administration, effective December 8, requiring coke operators to restrict beehive production 25 per cent. and to divert mine production representing that proportion to the coal markets. This, together with the diversion of coal from by-product ovens, effective at an earlier date, operated to very materially reduce coke output and forced a marked decline in pig iron production. The settlement of the coal strike, December 13, resulted in the withdrawal of the restrictions upon coke manufacture, greatly to the relief of furnaces and other consumers.

The restoration of war-time price limits on bituminous coal shortly after the inauguration of the coal strike, was followed on December 15 by the placing of the maximum limit of \$6 on furnace and \$7 on foundry coke, both of which regulations were still in force at the close of 1919.

The production and shipment of steam and by-product coal from the region continued throughout the year. In January there developed a tendency toward a reduction in production, while the coke consumers were urging heavier shipments of coke, and after the removal of government price and distribution regulations on February 1 there was a noticeable increase. After early spring coal production remained about stationary in volume until a more active demand for by-product coal arose in July. The rate of shipment showed comparatively little change until the steel strike resulted in the closing down of many by-product plants operated in conjunction with furnaces. In October, when it became apparent that a strike of the coal miners was very likely to occur, there was a very pronounced stimulation in the demand for coal, including by-product.

When the stress of the coal strike forced the Fuel Administration to divert coal from the by-product ovens, production in the coke region declined somewhat but under the order curtailing beehive coke production 25 per cent. there was a very material increase in the quantity. Lifting the ban on by-product coal after the coal strike was settled brought an old line of customers back into the region for coal which the plants supplied to the extent transportation facilities and the industry of their workers allowed.

Statistics of coal production being unavailable accurate figures for the year can not be given. It is believed, however, that the average has been somewhat close to 1,000,000 tons a month, including all shipments, rail and water, and for all purposes.

There was a notable recession in the building of by-product oven plants during the year. Two plants were completed and placed in operation, but no new undertakings were actually entered upon.

While at no time during the year was there a surplus of labor it was only rarely, or at isolated points in the region, that a real scarcity developed. Plants, as a rule, were able to hold their regular complements of men, and thus turn out coke to the limits fixed by the hindrances of car shortage, trade depressions and other causes. Throughout the year the margin of extra men at all plants was much below the pre-war average, hence when workers laid off the job for any cause their absence was more noticeable than formerly when there were others to take their place. This condition had the effect of handicapping operations frequently. On the whole it was the experience of plant managers that individual men made rather better time than during any of the preceding years but the small excess above plant needs often proved a decided hindrance to regular operation.

SUBSTANTIAL ADVANCES IN WAGE SCALES

The coke workers were entirely unaffected by the strike of the coal miners in other districts. Until December 1 the same rates of wages provided by the scale of November 10, 1917, continued in force. At a meeting held in March the operators decided to maintain the wage scale as long as the cost of living remained at the existing level. Following the grant of an advance of 14 per cent. to the miners in the unionized districts the H. C. Frick Coke Co., the acknowledged leader of the region in the matter of wage adjustments, gave notice of its intention to pay the same rate of increase for all classes of work at its plants, effective December 1. Other operators gave similar notice and according to their custom adopted the Frick scale, which was posted at the works of that company on December 17.

The following shows the new scale in comparison with the scale of November 10, 1917:

	Dec. 1, 1919	Nov. 10, 1917
Pick mining and loading, room and rib coal per 100 bushels	\$2.66	\$2.29
Pick mining and loading, heading coal, per 100 bushels	2.92	2.52
Pick mining and loading, wet heading coal per 100 bushels (pick miners to drill holes and furnish powder)	3.16	2.72
Loading machine coal per 100 bushels (company to drill holes and furnish powder)	1.88	1.65
Drawing coke per 100 bushels charged	1.64	1.44
Drivers, rope riders, cagers, track layers, blasters and timbermen (shafts and slopes per day, eight hours' work)	5.75	5.05
Drivers, rope riders, cagers, track layers, blasters and timbermen (drifts per day, eight hours' work)	5.70	5.00

Assistant track layers and assistant timbermen per day eight hours' work	4.95	4.35
Fire bosses per day	7.00	6.00
Mine laborers, per day, eight hours' work	4.75	4.15
Leveling, per oven (hand) .....	.24	.31
Outside day labor per day (nine hours' work)	4.00	3.80

The significant fact about the new scale is that it provided the largest advance of any scale in the history of the Connellsville region. The increase in previous scales ranged six, eight and 12 per cent. It is also noteworthy in that it makes the new rates of wages very nearly three times those paid under the scale of February 10, 1894, the first to be adopted in the region. During the years which have elapsed since then the rate for mining and loading room coal has risen from 78 cents to \$2.66 per 100 bushels, a gain of \$1.88, or 241 per cent. Other mining rates have been advanced proportionately, the average increase for all being 235 per cent. Inside labor has gained \$4.10 per day, from \$1.65 to \$5.75, or 247 per cent. Outside labor's share of the increase over the first scale has been \$2.65 per day, from \$1.35 in 1894 to \$4.00 in 1919, a gain of 200 per cent.

During 1919 the number of ovens listed as available for operation decreased by 1,303, from 37,061 at the beginning to 35,758 at the close of the year. The latter number is but 61 greater than was reported in 1907, but it is less by 3,400 ovens than in 1909 when the maximum equipment in the history of the region was reached in 39,159 ovens. Of the decrease that has taken place since 1909, 2,352 ovens have been relegated to the abandoned list within the past two years—1,049 in 1918 and 1,303 in 1919.

At the beginning of the year there were 161 plants in the region, 75 in the Connellsville and 86 in the Lower Connellsville district. In ownership the division was: Furnace, 70; merchant, 91. The following shows the distribution of ovens on January 1:

	Merchant	Furnace	Total
Connellsville District	2,676	16,926	19,602
Lower Connellsville District	11,638	5,826	17,459
Totals	14,309	22,752	37,061

As in the preceding year the greater oven casualties occurred in the Connellsville, or "Old Basin," district, the total decrease having been 801 as compared with 502 in the Lower Connellsville district. The loss of 1,176 from the furnace list does not mean that this number of ovens was permanently thrown out of commission. Instead, it represents the net decrease arising from the abandonment of 348 ovens at the plants of the H. C. Frick Coke Co.; 120 at plants of the Republic Iron & Steel Co.; the transfer of 1,108 ovens of the Oliver & Snyder Steel Co. to the merchant list, and the transfer of 400 ovens of W. Harry Brown to the furnace list.

While there were 896 ovens at merchant plants recorded as having passed their days of usefulness, and 400 transferred to the furnace list, the net decrease in the merchant list, was but 127, due to the addition of the three Oliver plants totaling 1,108 and the restoration of 45 ovens at Russell and 10 at Nellie. These changes left the region with 151 plants, or a loss of 10 during the year. Those in the Connellsville district number 69; Lower Connellsville district, 82, losses of six and four respectively. The furnace interests have 65 active plants, a loss of five; merchant operators, 86, a loss of five. The following shows the oven distribution at the close of 1919:

	Merchant	Furnace	Total
Connellsville District	3,381	15,470	18,801
Lower Connellsville District	10,851	6,106	16,957
Totals	14,182	21,576	85,758
Decrease in year	127	1,176	1,303

In the Connellsville district the following were classed as permanently out of service: Jimtown, 42 ovens; Magee, 40; Painter, 50; Shirey, 36. Thirty ovens were discarded at Fort Hill, 95 at Mount Braddock, 20 at Paul and 150 at Revere. The H. C. Frick Coke Co's list of unserviceable ovens included 200 at Valley and 96 at White, both plants now completely abandoned; 50 at Hecla No. 3 and one each at Juniata and Marguerite. Ten ovens were restored to use at Nellie, making the net decrease in available in the Connellsville district 801.

The five plants in the Lower Connellsville district which are no longer producers of coke are: Atchison, 120 ovens; Brownsville, 50 ovens; Emory, 32 ovens; Fretts, 80 ovens, and Menallen, 132 ovens. At Royal the use of 90 ovens was discontinued as also 49 at Edna. Russell, 45 ovens, and six scattering ovens were restored, making the net loss of serviceable ovens in the district 502.—*Connellsville Courier*.

CONNELLSVILLE COKE; AVERAGE MONTHLY PRICES

These monthly averages have been computed from the actual market as shown by transactions, and reported in the *Connellsville Courier*:

	Furnace					Foundry				
	1915	1916	1917	1918*	1919	1915	1916	1917	1918*	1919
January ...	\$1.55	\$3.14	\$9.44	\$6.00	\$5.84	\$2.10	\$3.90	\$10.92	\$7.00	\$6.85
February ...	1.55	3.41	10.57	6.00	4.72	2.15	4.00	12.10	7.00	5.54
March	1.53	3.45	9.58	6.00	4.05	2.13	3.85	11.90	7.00	4.75
April	1.55	2.45	8.00	6.00	3.71	2.13	3.75	10.12	7.00	4.63
May	1.50	2.34	8.40	6.00	3.80	2.15	3.56	9.90	7.00	4.65
June	1.50	2.54	12.32	6.00	3.92	2.20	3.35	11.70	7.00	4.75
July	1.67	2.65	13.42	6.00	4.06	2.25	3.30	13.42	7.00	5.08
August	1.54	2.75	11.85	6.00	4.32	2.28	3.30	14.25	7.00	5.64
September ..	1.66	2.94	6.00	6.00	4.42	2.42	3.45	12.55	7.00	6.16
October	2.18	5.69	6.00	6.00	4.60	2.62	5.35	7.00	7.00	6.24
November ..	2.35	6.91	6.00	6.00	6.05	3.10	9.16	7.00	7.00	7.05
December ...	2.85	9.00	6.00	6.00	6.81	3.50	10.35	7.00	7.00	7.38
Average ..	1.79	3.94	9.40	6.00	4.69	2.42	4.78	10.60	7.00	5.72

* Fuel Administration fixed price.

The annual average of prices of spot furnace coke of \$4.69, explains this authority, is by no means an average of the tonnage sold. The average of the quotations would represent an average of the tonnage sold if the same quantity were sold each day, but of course that is precisely what did not occur, for when high quotations obtained that was, as a rule, due to there being little coke available. Rises frequently occur after a large tonnage of free coke accumulated has been sold at a relatively low price. In a period of years it is generally the case that higher prices are realized on contract than on spot sales, having regard to the total tonnage, and that is as it should be for a furnace is willing to pay somewhat more money to have a regular supply of coke of the same brand week after week than to have odd lots of various brands picked up in the open market. The regular supply conduces to better furnace performance.

The average price realized on spot and prompt sales of furnace coke was considerably less than \$4.69, and even the average realized on contract furnace coke was less than \$4.69, the average of the entire tonnage being pulled up by foundry coke, which brought on an average nearly a dollar a ton more than furnace coke. The foundry coke did not pull the average up a great deal, however, because the tonnage is relatively limited. Furnace coke is used for

making all descriptions of coke pig iron, and about four tons of steel-making iron is made to one ton of foundry iron. Practically all the foundry iron is melted in the foundry cupola, one ton of foundry coke taking care of seven or eight tons of iron, while just a little Bessemer iron is melted in cupolas. Some Connellsville coke is used for cupola melting of pig iron produced with other than Connellsville furnace coke, including much of the Alabama foundry iron that is consumed in the north.

CONNELLSVILLE COKE FREIGHT RATES

The rates on coke per ton of 2,000 pounds from the Connellsville region to points both east and west, effective June 25, 1918 (the date of the latest change) are as follows:

Baltimore	\$2.40	Philadelphia	\$2.80	FOR EXPORT:	
Buffalo	2.60	Pittsburgh	1.20	<i>From Connellsville</i>	
Canton	2.00	Port Henry, N. Y. .	3.60	<i>District:</i>	
Chicago	3.30	Pottstown	2.70	Philadelphia (f. o. b.	
Cleveland	2.20	Reading	2.60	vessels)	\$2.40
Columbus	2.20	Richmond, Va.		Baltimore (f. o. b.	
Detroit	2.90	(B. & O.)	3.80	vessels)	2.40
East St. Louis	3.60	Richmond, Va.		<i>From Latrobe Dis-</i>	
Erie	2.20	(Penn. R.R.) ...	3.90	<i>trict:</i>	
Harrisburg	2.30	South Bethlehem...	2.80	Philadelphia (f. o. b.	
Joliet	3.30	Swedeland, Pa.	2.80	vessels)	2.20
Louisville	3.30	Toledo, O.	2.60	Baltimore (f. o. b.	
Milwaukee	3.80	Wheeling	1.80	vessels)	2.20
New York	3.80	Valley Points	1.80		

WAGE SCALES OF THE H. C. FRICK COKE CO.

FROM 1895 TO THE ADVANCE EFFECTIVE DECEMBER 1, 1919

(The rates paid by the H. C. Frick Co. are closely followed by most of the operators in the Connellsville coke region.)

Class of Work	Apr. 1 1895	Oct. 1 1895	Jan. 1 1896	Apr. 29 1899	Mar. 1 1900	Jan. 1 1903	Dec. 16 1903	Mar. 1 1905
Mining and loading room and rib coal, 100 bu.	\$0.90	\$0.95	\$1.05	\$1.12	\$1.25	\$1.35	\$1.10	\$1.20
Mining and loading heading coal, 100 bu.	1.02	1.08	1.20	1.27	1.40	1.50	1.25	1.37
Mining and loading wet heading coal, 100 bu.	1.10	1.16	1.25	1.31	1.45	1.55	1.30	1.45
Drawing coke, per 100 bu. charged...	.50	.53	.60	.64	.72	.77	.63	.70
Leveling, per oven .....	.09	.09	.10	.10	.12	.12	.10	.11
Drivers, rope riders, in shafts and slopes, per day	1.84	1.95	2.05	2.12	2.35	2.50	2.20	2.40
Drivers, rope riders, in drifts, per full run	1.75	1.85	1.95	2.02	2.25	2.40	2.10	2.30
Cagers, per full run	1.84	1.95	2.05	2.12	2.35	2.50	2.20	2.40
Tracklayers, blasters and timbermen, in shafts and slopes, per day	1.84	1.95	2.05	2.12	2.35	2.50	2.20	2.40
Tracklayers, blasters and timbermen, in drifts, per day	1.75	1.85	1.95	2.02	2.25	2.40	2.10	2.30
Assistant tracklayers and inside labor- ers, per day	1.50	1.59	1.65	1.72	1.87	1.97	1.65	1.75
	Mar. 1 1907	Jan. 1 1908	Jan. 16 1910	Apr. 1 1912	Feb. 1 1916	May 8 1916	Nov. 10 1917	Dec. 1 1919
Mining and loading room and rib coal, 100 bu.	\$1.35	\$1.20	\$1.35	\$1.44	\$1.58	\$1.66	\$2.29	\$2.66
Mining and loading heading coal, 100 bu.	1.50	1.38	1.50	1.58	1.73	1.85	2.52	2.92
Mining and loading wet heading coal, 100 bu.	1.60	1.50	1.62	1.70	1.86	2.00	2.72	3.16

Drawing coke, per 100 bu. charged ...	.77	.70	.78	.82	.90	.95	1.44	1.64
Leveling, per oven .....		.11	.12	.13	.14	.15	.21	.24
Drivers, rope riders, in shafts and slopes, per day	2.55	2.40	2.60	2.85	3.05	3.20	5.05	5.75
Drivers, rope riders, in drifts, per full run	2.45	2.30	2.55	2.80	3.00	3.15	5.00	5.70
Cagers, per full run	2.55	2.40	2.60	2.85	3.05	3.20	5.05	5.75
Tracklayers, blasters and timbermen, in shafts and slopes, per day	2.55	2.40	2.60	2.85	3.05	3.20	5.05	5.75
Tracklayers, blasters and timbermen in drifts, per day	2.45	2.30	2.55	2.80	3.00	3.15	5.00	5.70
Assistant tracklayers and assistant timbermen per day	1.95	1.75	2.00	2.15	2.30	2.40	4.35	4.95

Firebosses' wages on Feb. 1, 1916, were made \$3.75, and on May 8, 1916, were raised to \$3.90; December 16, 1916, increased to \$4.20; November 10, 1917, increased to \$6.00; December 1, 1919, increased to \$7.00 per day.

Fractions are omitted.

FUEL BRIQUETTING IN 1919

Like the entire coal mining industry, the manufacture of fuel briquets was adversely affected by the period of readjustment which followed the armistice. The total production of fuel briquets in 1919 was 296,000 net tons, a decrease of 182,000 tons, or 38 per cent., when compared with the preceding year. In fact, the output fell far below even that of 1917, reaching almost exactly the level of the prewar year, 1916. The value of the briquets produced in 1919 was \$2,301,000. In 1918, the value was \$3,213,000, and in 1917, \$2,234,000.

Twelve plants operated during the year, five in the eastern states, four in the central states, and three on the Pacific Coast. The fuels used included 104,000 tons of anthracite culm and fine sizes, 112,000 tons of semianthracite and bituminous coal, and 80,000 tons of lignite and petroleum residues.

COAL RECOVERED FROM STEAM-SHOVEL STRIP PITS

The tonnage of coal recovered from steam-shovel strip pits in the United States during 1918 totaled 10,648,428 tons, an increase of 2,556,863 tons, or 31.5 per cent. over the figures for 1917. By states, the 1918 recoveries were as follows:

State	Net Tons	No. of Shovels	State	Net Tons	No. of Shovels
Alabama	231,078	13	North Dakota	3,434	1
Arkansas	7,200	1	Ohio	2,705,785	74
Illinois	512,863	14	Oklahoma	160,064	7
Indiana	1,391,336	45	Penn. (bitum.)	1,031,578	51
Iowa	4,100	1	West Virginia	26,595	7
Kansas	917,345	25	Wyoming	68,633	3
Kentucky	12,000	2	Total bitum.	8,288,245	276
Maryland	14,651	2	Penn. (anth.)	2,360,183	82
Missouri	1,201,583	30	Grand total	10,648,428	358

FUEL ADMINISTRATION BITUMINOUS PRICE SCHEDULE

Between August 31, 1917, and January 31, 1919, inclusive, and between October 31, 1919, and March 31, 1920, inclusive, bituminous coal prices were subject to the regulation of the President under the powers conferred on him by section 25 of the Lever food and fuel control law, which, as a war measure, authorized him "to fix the price of coal and coke wherever and whenever sold." The initial schedule, issued over the President's signature August 21, 1917, and effective that date, fixed mine prices on bituminous in the majority of

the coal-producing states. As later developed during the examination of W. B. Colver of the Federal Trade Commission, this schedule was hurriedly devised upon a few hours' notice and the prices named by the Federal Trade Commission and approved by President Wilson were based upon admittedly incomplete data.

It was not, however, until October 1, 1917, that the United States Fuel Administrator, to whom the President had delegated his powers under section 25 of the Lever act, began a revision of these prices. From that date until January 2, 1919, or less than a month before price regulations were first suspended, orders were issued from time to time modifying the prices fixed.

The text of the order suspending price control at midnight, January 31, 1919, read as follows:

The United States Fuel Administrator, acting under authority of an Executive order of the President of the United States, dated 23 August, 1917, appointing said Administrator, and of subsequent Executive orders, and in furtherance of the purpose of said orders and of the Act of Congress therein referred to and approved August 10, 1917, hereby orders and directs:

Sec. I. That all rules, regulations, orders or proclamations, except those enumerated in Sec. II of this order, heretofore issued or promulgated by, or under authority of, the President of the United States, or by, or under authority of, said United States Fuel Administrator, fixing the prices of coal, coke, charcoal or wood, or regulating the production, sale, shipment, distribution, apportionment, storage or use thereof, or requiring the obtaining of licenses to engage in or carry on the business of distributing coal or coke, or establishing rules and regulations in respect to the holders of such licenses, or otherwise carrying out the purposes or provisions of the Act of Congress hereinbefore referred to, and the operation and effect of such rules, regulations, orders, or proclamations, be, and the same hereby are, suspended, until further, or other order or orders in the premises by the President of the United States, said United States Fuel Administrator, or other agency created by the President under said Act, in respect to all coal, coke, charcoal, or wood produced, sold, shipped, distributed, apportioned, stored or used after January 31, 1919.

Sec. II. That the following rules, regulations, orders, and proclamations shall continue in full force and effect until further order or orders in the premises:

(1) Order of said United States Fuel Administrator, dated January 17, 1919, establishing a regulation entitled "Regulation Relative to the Making of Contracts for the Sale of Coal or Coke by Operators, Producers, Jobbers, Sales Agents, or Purchasing Agents of Coal or Coke."

(2) Order of said United States Fuel Administrator, dated November 6, 1917, entitled "Order Relative to Tidewater Transshipment of Coal at Hampton Roads, Baltimore, Philadelphia, and New York and for the Employment and Cooperation with the Tidewater Coal Exchange, so-called, as a Common Agency to Facilitate Transshipment and to Reduce Delays in the Use of Coal Cars and Coal Carrying Vessels."

(3) All rules, regulations, orders, or proclamations, insofar as such rules, regulations, orders or proclamations confer upon or delegate to said United States Fuel Administrator, either individually or acting through that government agency called the United States Fuel Administration, any powers or authority for the carrying out of the purposes of the Act of Congress hereinbefore referred to.

(4) Order of said United States Fuel Administrator, dated January 31, 1919, prohibiting the shipment of coal for reconsignment.

Sec. III. That no order or regulation relative to the prices of coal, coke, charcoal or wood, or relative to the profits, margins, or commissions on sales thereof, or relative to the production, sale, shipment, distribution, apportionment, storage or use thereof, shall be made after the date of this order by the Federal Fuel Administrator for any state, or by any Local Fuel Administrator or Committee, pursuant to authority heretofore delegated or conferred, unless and until such proposed order or regulation shall have first been submitted to and approved by said United States Fuel Administrator.

Sec. IV. That nothing in this order contained shall be construed to cancel or revoke the designation or appointment of any person as an officer, agent, representative, counsel, assistant or subordinate of said United States Fuel Administrator or of the United States Fuel Administration.

Approved,
WOODROW WILSON.

H. A. GARFIELD,
United States Fuel Administrator.

PRICE CONTROL REVIVED AT TIME OF STRIKE

The occasion for the revival of the price control was the general bituminous strike which became effective November 1, 1919. Although this strike terminated about the middle of December, price control was not lifted until March 31, 1920. In the meantime, Dr. H. A. Garfield had resigned, and from the time of the acceptance of his resignation early in December, until the lifting of control, there was no one in authority at Washington who would entertain petitions for changes in schedules, which, it was contended, were in many cases unjust to the coal producers because of the changed conditions between February 1 and October 31, 1919.

The text of the Executive order reviving price control was as follows:

WHEREAS, the United States Fuel Administrator acting under the authority of an Executive order issued by me dated the 23rd of August, 1917, appointing the said Fuel Administrator and of subsequent Executive orders, and in furtherance of the purpose of said orders and of the Act of Congress therein referred to and approved August 10, 1917, did, on January 31, 1919, and on February 20, 1919, execute and issue orders suspending, until further order by the President certain rules, regulations, orders and proclamations therefore promulgated relating to the fixing of prices, the production, sale, shipment, distribution, apportionment, storage and use of coal, and whereas it is necessary to restore and maintain during the war certain of said rules, regulations, orders and proclamations:

Now, therefore, I, Woodrow Wilson, President of the United States of America, acting under authority of the aforesaid Act of Congress, approved August 10, 1917, do hereby revoke and annul said orders of January 31, 1919, and February 20, 1919, to the extent necessary to restore all of the said rules, regulations, orders and proclamations therein suspended concerning:

- (a) Fixing prices of bituminous and lignite coal at the mines;
- (b) Fixing or regulating commissions of persons and agencies performing the function of middlemen dealing in bituminous and lignite coal;
- (c) Fixing or regulating gross margins or prices of wholesale and retail dealers in bituminous and lignite coal;

and do hereby restore all of said rules, regulations and proclamations, to the extent herein provided, to full force and effect, as if they had not been suspended.

Inasmuch as it is contemplated that it may be necessary from time to time to revoke other portions of said orders of January 31, 1919, and February 20, 1919, and to restore to full force and effect rules, regulations, orders and proclamations, or portions thereof, regulating the production, sale, shipment, distribution, apportionment, storage or use of bituminous and lignite coal the Fuel Administrator shall, as occasion arises, restore, change or make such rules or regulations relating to the production, sale, shipment, distribution, apportionment, storage or use of bituminous and lignite coal as in his judgment may be necessary.

WOODROW WILSON.

The White House, October 30, 1919.

The commissions named under (b) in the foregoing order were, generally speaking, 15 cents per net ton on bituminous and five per cent. on the delivered price of smiting. The retail margins referred to (c) are treated, post, under "Retail Prices."

The Executive order suspending this control read:

Pursuant to the authority vested in me by the Act of Congress of August 10, 1917, entitled "An Act of Congress to provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of food products and fuel," and other powers there unto me authorizing, I, Woodrow Wilson, President of the United States of America, do hereby order and direct, that from and after 12:01 o'clock a. m. on the first day of April, 1920, the order issued by me on the 30th of October, 1919, restoring certain rules, regulations, orders and proclamations therein referred to, relative to the price of bituminous coal and other matters and things therein described, shall be suspended until further ordered and that all other executive orders subsequent thereto issued by me, except the executive order of February 25, 1920, relative to the Tidewater Coal Exchange, and all orders subsequent thereto issued by the United States Fuel Administrator or any person acting pursuant to authority conferred upon him either by me or the United States Fuel Administrator, shall be suspended until otherwise ordered, on and after 12:01 o'clock a. m. April 1, 1920, it being the intent and purpose of this order to restore at 12:01 o'clock a. m. on April 1, 1920, the rules and regulations of the United States Fuel Administration to the status existing immediately prior to the aforesaid executive order of October 30, 1919, but not in any wise to affect the validity of any act or thing done under any of the said orders or regulations prior to 12:01 o'clock a. m. April 1, 1920, or the executive order of February 25, 1920, relative to the Tidewater Coal Exchange.

THE COAL TRADE

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The price schedules revived October 31, 1919, and continued as base prices until March 31, 1920, were as follows:

ALABAMA

	Run-of- mine	Prepared sizes	Slack or screenings
<i>District No. 1:</i> Big Seam group: Big or Mary Lee and Newcastle seams, Blue Creek seam, excepting on Birmingham Mineral Branch of Louisville & Nashville R.R., south of Bessemer, Brookwood-Milldale seam when worked together, and Henry Ellen or Acmar seam	\$2.45	\$2.75	\$2.40
<i>District No. 2:</i> Cahaba group, being all seams in Cahaba field, including the Montevallo group, excepting the Climax, Henry Ellen, or Acmar, Helena, and Harkness seams, and the No. 2 Belle Ellen mine in the Youngblood seam. Black Creek group, being the Black Creek, Milldale, Carter and Durie seams, the Underwood seam in Etowah and Blount Counties, and the Jefferson seam in Marion, Walker, and Winston Counties	3.45	3.75	3.10
<i>District No. 3:</i> Pratt group: Pratt, Corona, Brockwood, Nickel Plate, America, Jagger, Coal City, Marion and Belmont seams; Jefferson seam, except in Walker, Marion, and Winston Counties; Mount Carmel seam or upper bench of Big Seam, and the Blue Creek seam on Birmingham Mineral Branch of Louisville & Nashville R.R., south of Bessemer ..	2.85	3.05	2.45
<i>District No. 4:</i> Helena and Harkness seams and coal mined by No. 2 Belle Ellen mine in Youngblood seam	2.90	3.20	2.70
<i>District No. 5:</i> Mines in the Climax seam, in or about Maylene, Shelby County	4.60	4.85	2.50
<i>Special prices—</i>			
Montevallo Mining Co., Shelby County	4.10	4.35	3.60
Montevallo Straven Coal Co., Shelby County	4.10	4.35	3.10
Warrior Pratt Coal Co., Jefferson County	2.70	2.95	2.45
West Helena Coal Co.	3.45	3.75	3.10
Yolande Coal & Coke Co.	3.45	3.75	3.10
<i>Rewashed smithing, 5.25.</i>			

ARKANSAS

<i>District No. 1:</i> Johnson, Franklin, and Sebastian Counties, except the Excelsior district	4.05	4.95	2.75
<i>District No. 2:</i> Logan and Scott Counties and the Excelsior district of Sebastian County, namely, mines on the Midland Valley R.R. (a) north of Montreal Junction, and (b) east of Hackett and west of, but not at Greenwood	4.70	5.50	2.95

COLORADO

<i>District No. 1:</i> Bituminous domestic coal, domestic field	2.60	3.85	1.60
<i>District No. 2:</i> Bituminous steam coal, Trinidad field	2.70	3.60	2.00
<i>District No. 3:</i> Lignite coal	2.60	3.60	1.35
<i>Special prices—</i>			
Gibson Lumber & Fuel Co. ....	.....	Nut 4.10	....
Royal Gorge Mine, Canon City	3.10	4.60	1.85
Canon City district mine of the Wolf Park Coal Co., and Radiant Mine of the Victor-American Fuel Co.	2.60	4.60	1.60
Trinidad district; Gray Creek Mine of the Victor-American Fuel Co., and Empire Mine of the Empire Mining Co. ...	3.45	3.60	2.00
Walsenburg district; Aztec Coal Mining Co., Caprock Fuel Co., Caddell & Carlson, Premium Mining Co., Rugby Fuel Co., Gordon Coal Co., Black Canon Coal & Fuel Co., Geo. McNally Coal Co., Black Hawk Coal Co., Minnequa Coal Co., Monument Valley Fuel Co., Ideal Fuel Co., and the Breek Coal Co. ....	....	Nut 4.10	....
Walsenburg district; Rapson Mining Co., Cedar Hill Coal & Coke Co., Oakdale Coal Co., the Ravenswood Mine of the Victor-American Fuel Co., Alliance Coal Co. (Reliance mine), Ideal Fuel Co., and the Breek Coal Co.	2.60	4.60	1.60
Williamsburg Slope Coal Co. at Florence, Fremont County ..	2.60	4.60	1.60
Temple Fuel Co. Screenings price on coal passing through 1¼-inch screen	2.60	3.85	2.00

	Run-of-mine	Prepared sizes	Slack or screenings
GEORGIA			
All Fields	3.60	3.85	3.55
ILLINOIS			
<i>District No. 1:</i> Including Mercer, Bureau, Kankakee, LaSalle, Grundy, Will, Putnam, Marshall, Livingston, Woodford, and McLean Counties	3.00	3.25	2.75
<i>District No. 2:</i> Including Rock Island, Henry, Warren, Knox, Stark, Peoria, Hancock, McDonough, Henderson, Fulton, Tazewell, and Schuyler Counties	2.75	2.95	2.45
<i>District No. 3:</i> Including Menard, Logan, Dewitt, Champaign, Vermilion, Sangamon, Pratt, Christian, Moultrie, Shelby, Greene, Macoupin, and Montgomery Counties, and Madison County, north of the latitude of Alton; also all mines not included in other rulings	2.35	2.55	2.05
<i>District No. 4:</i> Including Bond, St. Clair, Monroe, and Randolph Counties, and Madison County, south of the latitude of Alton, and Clinton, Washington, and Perry Counties, not including mines along the line of Illinois Central R.R., between Vandalia and Carbondale	2.35	2.55	2.05
<i>District No. 5:</i> Including Jackson County, not including mines on the line of the Illinois Central R.R., between Carbondale and Duquoin	2.75	2.95	2.45
<i>District No. 6:</i> Including Marion, Jefferson, Franklin, Williamson, Johnson, Hamilton, Saline, White, Gallatin, and mines along the main line of the Illinois R.R., between Vandalia and Carbondale, in Clinton, Washington, Perry, and Jackson Counties	2.35	2.55	2.05
Special prices—			
Macon County	2.60	2.85	2.05
Moweaqua Coal Mining & Manufacturing Co., Moweaqua, Christian County	2.75	3.00	2.50
Assumption Coal & Mining Co., Assumption, Christian County	3.35	4.90	2.50
Spoon River Colliery, Ellisville	3.60	3.85	2.75
Latham Coal & Mining Co., Logan County	2.50	2.70	2.20
Searls Coal Co., 1¼-inch .....	....	....	2.05
INDIANA			
<i>District No. 1:</i> All coal not otherwise classified	2.35	2.55	2.05
<i>District No. 2:</i> Brazil block	3.30	3.60	2.05
Special prices—			
Essanbee Mines Co., Vermilion County	2.75	2.95	2.45
Atlas Mining Co., Linton Summit mine, Greene County	2.65	2.85	2.35
IOWA			
<i>District No. 1:</i> All coal not otherwise classified	3.05	3.30	2.80
<i>District No. 2:</i> Appanoose, Wayne, Boone, and Webster Counties	3.10	3.45	2.35
KANSAS			
<i>District No. 1:</i> Cherokee and Crawford Counties, except shaft mines in Lightning Creek or upper thin vein, and any mining operations in the State not covered by other rulings	3.05	3.30	2.80
<i>District No. 2:</i> Shaft workings in the Lightning Creek or upper thin vein in Cherokee and Crawford Counties	4.00	4.30	2.80
<i>District No. 3:</i> Osage, Franklin, and Linn Counties	3.85	4.85	3.15
<i>District No. 4:</i> Leavenworth County	3.75	4.00	3.25
Special prices—			
Cherokee and Crawford Counties:			
Mill coal	\$2.95		
Nut-run or stoker coal	3.05		
KENTUCKY			
<i>District No. 1:</i> Coal mined west of the 85th degree of longitude.	2.35	2.60	2.05
<i>District No. 2:</i> The Counties of Letcher, Harlan and Perry County, except operations in Perry County, included in District No. 3	2.55	2.80	2.30
<i>District No. 3:</i> That part of Kentucky east of the 85th degree of longitude, excepting Letcher, Harlan and Martin Counties, that part of Pike County on the watershed of the Tug Fork			

THE COAL TRADE

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	Run-of-mine	Prepared sizes	Slack or screenings
of the Big Sandy River and the operation of the Kentucky Block Cannel Coal Co., south of the Licking River, in Morgan County, and that part of Perry County, included in District No. 3	3.00	3.25	2.75
<i>District No. 4</i> (Thacker): Operations in Pike County on the watershed of the Tug Fork of the Big Sandy River east of Williamson on the Norfolk & Western R.R.	3.65	2.90	2.40
<i>District No. 5</i> (Kenova): Martin County, and operations in Pike County on the watershed of the Tug Fork of the Big Sandy River, west of Williamson on the Norfolk & Western R.R.	2.65	2.90	2.40
Special prices—			
Blue Gem coal produced in Knox and Whitley Counties by operators who are members of the Tri-County Blue Gem Operators' Association	3.75	4.50	2.75
1½-inch nut and slack			\$3.00
Wallen-Jellico Coal Co., Whitley County	3.70	3.95	2.95
Norton Coal Co., White Plains Coal Co., and B. D. Williams Coal Co., in the Empire or Mannington seam in Christian and Hopkins Counties	2.80	3.05	2.45
Kentucky Block Cannel Coal Co., south of the Licking River, Morgan County	3.90	3.95	2.75
Looney Creek Coal Co., Harlan County, and Reliance Coal & Coke Co., Glomawr Mine, Perry County	3.00	3.25	2.75
Climax Coal Co., Low Ash Mining Co., Southern Mining Co., Varilla Mining Co., Winona Coal Co., Yellow Creek Coal Co., Utility Gas Coal Co., Kanawha Knox Coal Co., Bennets Fork Coal Co., J. B. Blue Gem Coal Co., J. B. Jellico Coal Co., J. B. Straight Creek Coal Co., Paige Jellico Coal Co., Pine Ridge Coal Mining Co. (in Bell County)	3.05	3.30	2.75
Clover Fork Coal Co., Golden Ash Coal Co., King Harlan Coal Co., Lick Branch Coal Co., Wilson Berger Coal Co., East Harlan Coal Co., R. C. Tway Coal Co., White Star Coal Co., Harlan Fox Coal Co., Wallins Creek Coal Co., Harlan Gas Coal Co., Greech Coal Co., Banner Fork Coal Co., McComb Coal Co., Bear Branch Coal Co., Kentucky Harlan Coal Co., Middleton Coal Co., Kentucky King Coal Co., Spring Branch Coal Co., High Point Coal Co., Harlan Kellicke Coal Co., J. L. Smith Coal Co., Adair Coal Co., Bailey Creek Coal Co., High Splint Coal Co., Black Mountain Coal Corporation (in Harlan County)	2.60	2.85	2.30

MARYLAND

All Fields	2.75	3.00	2.50
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MICHIGAN

Mines not otherwise specified	3.50	3.95	2.90
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Special prices—

Handy Bros. Mining Co.	4.05	4.60	3.25
What Cheer Coal Mining Co. (except Flint mine)	3.75	4.30	2.95
Robert Gage Coal Co (Caledonia mine)	4.90	5.40	4.25
Banner Coal Co.	3.75	4.30	2.95
Bliss Coal Co.	3.75	4.30	2.95
Consolidated and Wolverine Coal Co.	3.75	4.30	2.95
Robert Gage Coal Co. (except Caledonia mine)	3.75	4.30	2.95
Community Coal Co.	3.50	3.95	2.90
What Cheer Mining Co., (Flint mine)	3.50	5.90	4.25

MISSOURI

<i>District No. 1</i> : Counties of Schuyler, Adair, except operation of the Star Coal Co., Macon County, east of New Cambria and mining operations not covered by other rulings; Randolph, Monroe, Ralls, Audrian, Callaway and Montgomery Counties	3.05	3.30	2.80
<i>District No. 2</i> : Counties of Putnam, Sullivan, Linn, Chariton, Carroll, Ray, Clay, and Lafayette, and Macon County, west of New Cambria, and the long wall, thin seam mines in Randolph County	3.50	3.75	2.80
<i>District No. 3</i> : Grundy County, operations of the Star Coal Co., in Adair County, and shaft workings in the Lightning Creek,			

	Run-of- mine	Prepared sizes	Slack or screenings
or upper thin vein in Marion, Bates, Vernon and Barton Counties	4.00	4.30	2.80
<i>District No. 4:</i> Harrison County	3.50	3.75	2.80
<i>District No. 5:</i> Platte County	3.75	4.00	2.80
<i>District No. 6:</i> Boone and Cooper Counties	3.50	3.75	2.80
<i>District No. 7:</i> Johnson, Henry, St. Clair, Bates, Vernon, and Barton Counties	3.05	3.30	2.80
<i>District No. 8:</i> Dade County	3.50	3.75	2.80
Special prices—			
Home Coal Co., Macon County	3.50	3.75	2.80
Moniteau Co., Moniteau and Morgan Counties	4.95	5.45	2.90
Canneloid coal mined at the Johnson mine in Anaconda, Franklin County, by J. S. Turley	3.90	....	....
Barton and Vernon Counties:			
Mill coal	\$2.95		
Nut-run or stoker coal	3.05		

MONTANA

All Fields	3.05	3.95	1.85
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NEW MEXICO.

<i>District No. 1:</i> Raton District	2.70	3.60	2.00
<i>District No. 2:</i> Gallup Field	3.40	4.40	2.35
<i>District No. 3:</i> Carthage Field	4.60	5.40	3.90
<i>District No. 4:</i> Cerrillos Field	4.50	5.50	4.00
<i>District No. 5:</i> Sugarite and Monero Fields	3.35	4.35	2.35
Mines not otherwise grouped	2.75	3.00	2.50

NORTH DAKOTA

Lignite coal—			
<i>District No. 1:</i> South of the 12th Standard Parallel	2.60	2.85	1.60
Six-inch steam lump	\$2.35		
<i>District No. 2:</i> North of the 12th Standard Parallel	3.05	3.35	1.35
Six-inch steam lump	\$2.85		

OHIO

<i>District No. 1:</i> The County of Meigs and the Townships of Cheshire and Addison in the County of Gallia	2.75	3.00	2.50
<i>District No. 2:</i> The Counties of Vinton, Jackson, Lawrence, Scioto, Pike and the County of Gallia, except the Townships of Cheshire and Addison	3.40	3.65	3.25
<i>District No. 3:</i> The Counties of Hocking and Athens and the Townships of Coal and Monroe in Perry County and the Township of Homer in Morgan County	2.50	2.75	2.25
<i>District No. 3A:</i> Bailey Run or Number 7 Seam	2.90	3.15	2.65
<i>District No. 4:</i> The Counties of Washington and Noble and the County of Morgan except the Township of Homer and the County of Perry except the Townships of Coal and Monroe ..	2.90	3.15	2.65
<i>District No. 5:</i> The County of Muskingum	2.65	2.90	2.40
<i>District No. 6:</i> The Counties of Holmes, Tuscarawas, Carroll, Coshocton and the Townships of Monroe, Franklin, Washing- ton and Freeport, in the County of Harrison, and the Town- ships of Liberty and Wheeling in the County of Guernsey, and the Townships of Washington and Yellow Creek, in the County of Columbiana, and the Townships of Brush Creek, Saline, Springfield, Ross and Knox, in the County of Jeffer- son and operations in the 8-A vein in Flushing and Union Townships in the County of Belmont	2.90	3.15	2.65
<i>District No. 7:</i> The Counties of Trumbull, Portage, Summitt, Mahoning, Medina, Wayne and Stark and the County of Columbiana, except the Townships of Washington and Yel- low Creek	3.40	3.65	3.25
<i>District No. 8:</i> The Counties of Monroe and Belmont except the Township of Warren and operations in the 8-A vein in Flush- ing and Union Townships and the County of Harrison except the Townships of Monroe, Franklin, Washington and Free- port; and the County of Jefferson except the Townships of Brush Creek, Saline, Ross, Knox and Springfield	2.35	2.60	2.35
<i>District No. 9:</i> The County of Guernsey, except the Townships of Wheeling and Liberty, and the Township of Warren in Belmont County	2.50	2.75	2.25

	Run-of- mine	Prepared sizes	Slack or screenings
Special prices—			
Southern Ohio Coal Co., Starr Township, Hocking County..	3.40	3.65	3.25
Wayne Mining Co., Guernsey County	2.95	3.20	2.70

OKLAHOMA

<i>District No. 1:</i> LeFlore, Haskell, Okmulgee, Tulsa, Rogers, and			
<i>District No. 2:</i> McAlester vein in Pittsburg and Latimer Counties	4.60	5.45	3.85
Coal Counties, and the Hartshorn-Wilburton vein in Pittsburg and Latimer Counties	4.05	4.95	2.75

PENNSYLVANIA

<i>District No. 1:</i> Operations in the Counties of Tioga, Lycoming, Clinton, Center, Huntington, Bedford, Cameron, Elk, Clearfield, Cambria, Blair, Somerset, Jefferson, Indiana, Clarion, Armstrong, Butler, Mercer, Lawrence, and Beaver, and operations in Allegheny County from the lower end of Tarentum Borough, north to the county line, and in Westmoreland County, from a point opposite the lower end of Tarentum Borough, north along the Allegheny River to Kiskiminitas River, and along the Kiskiminitas River, eastward to the Conemaugh River, and continuing along the Conemaugh River to the county line of Cambria County, and operations on the Baltimore & Ohio R.R., from the Somerset County line to and including Indian Creek and the Indian Creek Valley branch of the Baltimore & Ohio R.R.	2.95	2.95	2.95
<i>District No. 2:</i> Operations in the Counties of Allegheny, Westmoreland, Fayette, Greene, and Washington, except (a) that portion of Allegheny County from the lower end of Tarentum Borough, north to the county line, (b) the territory in Westmoreland County from a point opposite the lower end of Tarentum Borough, north along the Allegheny River to the Kiskiminitas River, and along the Kiskiminitas River, eastward to the Conemaugh River, and continuing along the Conemaugh River, to the county line of Camoria County, (c) operations on Indian Creek, in Westmoreland County, and (d) operations in the Ohio Pyle district of Fayette County..	2.35	2.60	2.35
Special prices—			
Fall Brook Co., Tioga County	2.95	3.25	2.75
Graff Min'g Co., in Westmoreland County, stripping operation	2.95	2.95	2.95
Wilson Begler Coal Co., Beaver County	3.40	3.65	3.25

TENNESSEE

<i>District No. 1:</i> All except Overton and Fentress Counties	3.00	3.25	2.75
<i>District No. 2:</i> Overton and Fentress Counties	2.55	2.80	2.30
Special prices—			
Blue Gem coal produced in Campbell County by operators who are members of the Tri-County Blue Gem Coal Operators' Association	3.75	4.50	2.75
1¼-inch nut and slack	\$5.00		
Bon Air Coal & Iron Corp., Bon Air mine, in White County	3.90	4.15	2.75
White Oak Coal Co., Fentress County	3.00	3.25	2.75
Sterling Coal & Coke Co., Reliance Coal & Coke Co., Bryson Mountain Coal & Coke Co., Climax Coal Co., Mingo Coal & Coke Co., Ford Ridge Coal & Coke Co. (in Claiborne County)	3.05	3.30	2.75

TEXAS

<i>District No. 1:</i> State of Texas, except Erath, Young, Palo Pinto, and Wise Counties	4.70	5.50	2.70
<i>District No. 2:</i> Erath, Young, and Palo Pinto Counties	3.85	5.00	2.70
<i>District No. 3:</i> Lignite coal	2.00	2.20	1.45
<i>District No. 4:</i> Wise County	4.70	5.85	2.70

UTAH

All Fields	3.00	3.65	1.85
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VIRGINIA

<i>District No. 1:</i> All coal not otherwise classified	2.35	2.60	2.10
<i>District No. 2:</i> Operations in the Richmond Basin within Chesterfield and Henrico Counties	3.65	3.90	3.40
<i>District No. 3:</i> Clinch Valley No. 1 district, or "Upper Clinch"; coal mining operations on the Norfolk & Western Ry., Hockman to Finney, inclusive	2.85	3.10	2.60

	Run-of-mine	Prepared sizes	Slack or screenings
<i>District No. 4: Pocahontas District of Virginia, viz., operations on Norfolk & Western Ry., west of Graham, Va., to Welch, W. Va., and operations on the Virginian R.R. and branches west of Rock to Herndon, W. Va.</i>	2.35	2.60	2.10
<i>District No. 5: Operations in Lee, Wise and Dickenson Counties, and Russell County west of Finney on the N. & W. Ry. . . .</i>	2.55	2.80	2.30
<i>District No. 6: Thacker District in Virginia, viz., operations in extreme northern portion of Buchanan County</i>	2.65	2.90	2.40
Special prices—			
Splash Dam Coal Corp., and the McClure Coal Corp., County of Dickenson	2.85	3.10	2.60
Cumberland Coal Co., Penn Lee Coal Co., Leecova Coal Co., Wilma Coal Co., Virginia Lee Co., Emerald Coal Co., Obey Branch Coal Co., Puckitt's Creek Coal Co., Mohawk Coal Mining Co., Powell River Coal Co., North Fork Coal Co., T. M. Morrison Coal Corporation, and the Lone Mountain Coal Corporation, and the Imperial Mine of the Virginia Iron, Coal & Coke Co., of Roanoke, in Lee County	3.00	3.25	2.75
Black Mountain Mining Co., Benedict Coal Co., Bondurant Coal Co., Darby Coal Co., United Collieries Co., Inc., and Old Virginia Coal Co., near St. Charles, Lee County	3.05	3.30	2.75
Stonega Coal & Coke Co., at Keckee, Lee County, and operations at Clinchfield Coal Corporation, Camper Coal Co., Yellow Creek Coal & Coke Co., Gladeville Coal Co., Wise Coal & Coke Co., Blackwood Coal & Coke Co., Stonega Coal & Coke Co., Robert Fleming & Co., and John B. Guernsey & Co., in Wise County	2.60	2.85	2.30
Bradley Coal Co., White Oak Coal Co., and Felton Coal Mining Co., in Wise County	3.00	3.25	2.75
Roberts Coal Co., Stone Gap Colliery Co., Norton Coal Co., Hawthorne Coal Co., J. A. Esser Coke Co., and Kilgore Coal Co., in Wise County	3.05	3.30	2.75

WASHINGTON†

Screened coal—bituminous

<i>District No. 1: Kittitas County</i>	3.45	....	2.40
<i>Lump and egg</i>	\$3.85		
<i>Special steam and gas</i>	8.15		

Screened coals—subbituminous

<i>District No. 2: Lewis and Thurston Counties</i>	2.65	....	1.15
<i>Lump</i>	\$3.85		
<i>Lump nut</i>	3.15		
<i>Nut</i>	2.90		

Washed coals—bituminous

Kittitas County . . . . .	....	3.90	....
<i>Washed coals</i>			
<i>District No. 3: Pierce, King, Lewis and Skagit Counties . . . . .</i>	....	....	2.40
<i>Lump nut</i>	\$5.90		
<i>Mixed steam</i>	5.15		
<i>Straight steam and gas</i>	2.40		

**In the Pocahontas district of Virginia and West Virginia and the New River and Tug River districts of West Virginia, where slack or screenings passing through the standard screens customarily used prior to January 1, 1916, constituted not less than 55 per cent. of the mine-run output of any mine, such slack or screenings could be sold at not to exceed the applicable government price at date of shipment for mine-run produced at said mine.

†Preparation of coal mined within the State of Washington was to conform to reports submitted to and approved by state mine price board, subject to such further modifications as might be approved by State Fuel Administrator.

Washed coal—subbituminous

	Run-of-mine	Prepared sizes	Slack or screenings
<i>District No. 4: King County</i> .....	....	....	1.40
<i>Lump nut</i>	\$4.90		
<i>Pea</i>	3.40		
<i>Buckwheat</i>	3.15		
<i>District No. 5: Lewis County</i> .....	....	....	1.15
<i>Lump</i>	\$3.85		
<i>Nut</i>	3.65		
<i>Pea</i>	2.90		
<i>Buckwheat</i>	1.40		

WEST VIRGINIA

<i>District No 1 (Pocahontas): Operations on the Norfolk & Western Ry. and branches west of Graham, Va., to Welch, W. Va., including Newhall, Berwind, Canebrake, Hartwell, and Beech Fork branches; also operations on the Virginian Ry. and branches, west of Rock to Herndon, W. Va.**</i>	2.35	2.60	2.10
<i>District No. 2 (Tug River): Coal mining operations on the Norfolk & Western Ry. west of Welch to Panther, including branches, except Newhall, Berwind, Canebrake, and Hartwell**</i>	2.75	3.00	2.50
<i>District No. 3 (Thacker): Operations in McDowell County west of Panther, on the Norfolk & Western Ry., and in Mingo County, west along the Tug Fork of the Big Sandy River, to Williamson, on the Norfolk & Western Ry.</i>	2.65	2.90	2.40
<i>District No. 4 (Kenova): Operations on the watershed of the Tug Fork of the Big Sandy River west of Williamson, on the Norfolk & Western Ry., and Wayne County</i>	2.65	2.90	2.40
<i>District No. 5 (Logan): Logan County, and operations in Boone County south of Danville, on the Chesapeake & Ohio R.R., and Lincoln County south of Gill, on the Chesapeake & Ohio R.R.</i>	2.50	2.75	2.25
<i>District No. 6 (New River): Fayette County, east of the Gauley River to Hawk's Nest on the Chesapeake & Ohio R.R., and east of a line drawn from Hawk's Nest to Lively, on the Virginian R.R., and the Counties of Fayette and Raleigh south of Lively, and the County of Wyoming, north of Herndon on the Virginian R.R.**</i>	2.70	2.95	2.45
<i>District No. 7 (Kanawha): Nicholas County west of the mouth of the Meadow Branch of the Gauley River, the County of Fayette west of the Gauley River, and north of the Kanawha and west of a line drawn from Hawk's Nest on the Chesapeake & Ohio R.R., to Lively, on the Virginian R.R., and operations in the Counties of Raleigh and Boone on the watershed of the Clear Fork branch of Coal River, and the County of Boone north of Danville, on the Chesapeake & Ohio R.R., and the Counties of Kanawha and Clay south Charleston, and the County of Lincoln, north of Gill, on the Chesapeake & Ohio R.R.</i>	2.60	2.85	2.35
<i>District No. 8: Putnam County</i>	2.85	3.10	2.60
<i>District No. 9: Coal mined in Mason County</i>	2.75	3.00	2.50
<i>District No. 10: Coal & Coke, and Gauley districts: Taylor, Barbours, Buckhannon, Lewis, Randolph, Gilmer, Braxton, Webster, and Greenbrier Counties; operations in Nicholas County east of the mouth of the Meadow Branch of the Gauley River, and the Coal & Coke district in Kanawha and Clay Counties north of Charleston</i>	2.65	2.90	2.40
<i>District No. 11: The Upper Potomac, Cumberland, and Piedmont fields, comprising all coal mined in the State of Maryland and in the counties of Mineral, Grant, Tucker, and Preston, West Virginia</i>	2.75	3.00	2.50
<i>District No. 12 (Fairmont): Monongalia, Marion, and Harrison Counties</i>	2.50	2.75	2.25
<i>District No. 13: Coal mined in Hancock, Brooke, Ohio and Marshall Counties</i>	2.35	2.60	2.35

**In the Pocahontas district of Virginia and West Virginia and the New River and Tug River districts of West Virginia, where slack or screenings passing through the standard screens customarily used prior to January 1, 1916, constituted not less than 55 per cent. of the mine-run output of any mine, such slack or screenings could be sold at not to exceed the applicable government price at date of shipment for mine-run produced at said mine

	Run-of-mine	Prepared sizes	Slack or screenings
Special prices—			
Ajax Hocking Coal Co., Mineral County	3.10	....	....
Davy-Pocahontas Coal Co., McDowell County	3.10	....	....
Saxman Coal & Coke Co., near Richwood, Nicholas County..	3.15	3.40	2.90
Three Forks Coal Co., New River District	3.00	3.00	2.45

WYOMING

Mines not otherwise specified	3.00	3.65	1.85
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Subbituminous

<i>Egg-run</i>	\$2.50
<i>Nut-run</i>	2.40

NOTE: Under the original schedules, certain prices in certain states, viz., Arkansas, Colorado, New Mexico, Oklahoma, and Texas, were subject to discounts during spring and summer months, but as the revived schedules were not effective during the discount periods, only base prices are shown.

The application of these base and special prices were subject to the following special regulations, covering preparation and export and bunker movement:

Lake Dock Order

Effective August 26, 1918, bituminous coal of the grades hereinafter specified received at any Lake Michigan or Lake Superior dock from and including the effective date of this order, to and including April 30, 1919, and reshipped by rail from the docks to purchasers buying in carload lots, may be sold at prices f. o. b. cars at the dock not to exceed the following per net ton, viz:

COAL FROM	Lump	Run-of-Pile	Screening
Southwestern district in the State of Pennsylvania, Fairmont and Panhandle districts in the State of West Virginia, and districts Nos. 3, 8, and 9 in the State of Ohio	\$5.80	\$5.55	\$5.30
Harlan, Thacker, and Kenova districts in the State of Kentucky, the Thacker, Kenova, and Mason County districts in the State of West Virginia, and districts Nos. 1, 2, 4, 5, 6, 7, in the State of Ohio	6.30	6.05	5.80
Pocahontas, New River, and Tug River districts in the State of West Virginia	6.30	6.05	6.05

The above prices are based on freight rates between the mines and Lake Erie ports effective July 1, 1918. An amount equivalent to any increase in such freight rates by order of the United States Railroad Administration in effect at the effective date hereof may be added to such prices, and in the event that any further increase in such freight rates shall become effective at any time hereafter, an additional amount equivalent to such further increase may also be added to such prices.

For coal so received by lake shipment at any of the docks aforesaid, and sold for delivery by truck, wagon, or other usual facility for retail delivery to consumers without any rail reshipment, prices must be fixed and determined in the manner and according to the provisions and limitations prescribed in the regulations of the United States Fuel Administrator relative to maximum gross margins of retail coal dealers.

The revived order on cannel coal read:

Regulation Fixing the Price of Cannel Coal and the Mixture of Cannel Coal and Bituminous Coal

Section I. The prices of cannel coal shipped on and after 7 a. m. July 16, 1918, are fixed f. o. b. cars at the mine per net ton not to exceed the applicable government mine price for bituminous coal at the mine where such cannel coal is produced; provided, however, that if the producer of such cannel coal shall obtain from the United States Fuel Administration a permit therefor, lump cannel coal may be sold for a sum not to exceed \$1 per net ton above the applicable government mine price for run-of-mine bituminous coal at the mine where such coal is produced.

Sec. II. Any producer desiring to obtain a permit to make the additional charge for cannel coal provided in Sec. I of this regulation may file with the Bureau of Prices of the United States Fuel Administration, Washington, D. C., an application therefor in such form as said Bureau of Prices may from time to time prescribe.

Sec. III. All invoices for cannel coal for which the additional charge provided is Sec. I hereof is made must bear the number of the permit of the producer of such coal.

Sec. IV. When cannel coal is loaded into box cars, a charge of 50 cents per net ton in addition to the prices fixed in Sec. I hereof may be made to cover the cost of labor and material necessary to load such coal into box cars. No such charge shall be made on shipments in box cars of cannel coal mixed with bituminous coal.

Sec. V. When the run-of-mine or prepared cannel coal is mixed with bituminous coal of any size the mixture shall be sold at a price not to exceed the government mine price for bituminous screenings applicable at date of shipment at the mine where such cannel coal is produced.

Sec. VI. When cannel coal, from which the lumps have been screened, is mixed with bituminous coal of any size, the mixture shall be sold at a price not to exceed the government mine price for bituminous screenings applicable at date of shipment at the mine where such cannel coal is produced less 30 cents per net ton.

On preparation the following orders automatically came into effect October 31:

*Regulation Establishing the Definition of Slack or Screenings
and Prepared Sizes*

Section I. Slack or screenings: Effective 7 a. m. June 1, 1918, the term "slack or screenings" as used in the Executive order of the President dated August 21, 1917, and in the orders of the United States Fuel Administrator fixing prices for bituminous coal, shall, from and after the effective date of this regulation, apply to and include coal which, when loaded at the mine, passes through the accepted standard screens customarily used for making slack or screenings at such time prior to January 1, 1916.

Sec. II. Application for specific screen specifications as named in Sec. I will receive consideration when made by consumers or producers in such form as the United States Fuel Administrator may from time to time prescribe.

Sec. III. Prepared sizes: The term "prepared sizes" as used in the Executive Order of the President dated August 21, 1917, and in the orders of the United States Fuel Administrator fixing prices of bituminous coal shall on and after the effective date of this regulation, include only coal which, when loaded at the mine, passes over the screens specified in Sec. I for the district in which such coal is mined.

Sec. IV. The United States Fuel Administrator may, upon application from producers or consumers in any district, establish prices for any special size different from those specified in Secs. I and III or for any mixture of sizes which special size or mixture is required for the proper distribution of coal from such district.

*Regulation Concerning Special Methods of Cleaning and Preparing Bituminous Coal and the
Conditions Under which Increased Prices May Be Charged Therefor*

Section. I. Mechanical preparation; effective 7 a. m. June 1, 1918: No special allowance will be made for the ordinary method of cleaning or picking coal employed in any district, but a special allowance will be made for coal mechanically washed or extraordinarily cleaned or picked in such manner that the fuel value of the coal has been substantially increased by the removal of waste and impurities. Such allowance will be specifically determined by the United States Fuel Administration and the reason for such allowance and the amount thereof will be set forth in a permit to be applied for and issued pursuant to the provisions of Secs. II, III, IV, and V hereof.

Sec. II. Any person, firm, or corporation desiring to obtain a permit under this regulation may file, with the Bureau of Prices of the United States Fuel Administration, an application in such form as the United States Fuel Administration may from time to time prescribe.

Sec. III. On receipt of a written application, as provided in Sec. II of this regulation, for authority to make an additional charge per net ton for coal specifically prepared in the manner indicated in Sec. I hereof the United States Fuel Administrator may, in his discretion, issue a permit authorizing the applicant to make such additional charge. Every such permit shall be in writing, shall be signed and numbered by the United States Fuel Administrator or by his duly authorized representative, shall be subject at all times to revocation or cancellation by the United States Fuel Administrator, and shall be in such form and subject to such terms, conditions, restrictions, provisions, and requirements as may from time to time be prescribed by the United States Fuel Administrator.

Sec. IV. The amount added to the base price pursuant to a permit issued under this regulation, together with the number of the permit, must be separately stated on each invoice.

Sec. V. Reports shall be made to the United States Fuel Administration by each operator holding a permit hereunder upon such dates, in such form, and containing such information as may from time to time be prescribed or required by the United States Fuel Administration.

Sec. VI. Nothing in this regulation contained shall be construed in any manner whatsoever to relieve any operator from the obligation to exercise the highest degree of care in mining coal, to the end that excessive quantities of rock, slate, bone, sulphur, fireclay, shale, or other ash-forming impurities shall be eliminated therefrom, nor from the obligation to prepare coal in such manner that the same would have been considered clean and merchantable under normal market conditions existing prior to the present war.

Under dates of July 3 and 31, 1918, orders had been issued defining and establishing special prices on "modified mine-run" and sized screenings. These, of course, were also automatically revived. The first order provided that "the prices of 'modified mine-run' coal shipped on and after the effective date

of this regulation are hereby fixed f. o. b. cars at the mine per net ton, not to exceed the applicable government mine prices for screenings at the mine where such 'modified mine-run' coal is produced plus the following percentages of the margin or difference between the applicable government mine prices for mine-run and screenings at such mine, viz.:

"Run-of-mine passed through two-inch openings, 40 per cent. of such margin.

"Run-of-mine passed through three-inch-openings, 75 per cent. of such margin.

"Run-of-mine passed through four-inch-openings, 90 per cent. of such margin.

"Run-of-mine passed through five-inch openings, 95 per cent. of such margin.

"Run-of-mine passed through six-inch or larger openings shall take the applicable government price for run-of-mine."

The order covering sized screenings, effective August 1, 1918, read as follows:

"For all special sizes (of screenings) passing over a mesh over one-half inch in size, the applicable government mine price for prepared coal at the mine where such screenings are produced.

"For all special sizes passing over a mesh over one-quarter inch and under one-half inch in size, the applicable government mine price for run-of-mine coal at the mine where such special sizes are produced.

"For all fine sizes from sized coal passing through a mesh one-half inch or smaller in size, the applicable government mine price for standard screenings at the mine where such fine screenings are produced, less 30 cents per net ton.

"If fine screenings or 'carbon' passing through one-half inch or smaller mesh as the result of producing special sized screenings are mixed with other coal, whether the same be mine-run, prepared or standard screenings, the selling price of the mixture shall not exceed the applicable government mine price for standard screenings at the mine where such mixture is produced, less 30 cents per net ton."

The price to be charged on smithing coal was one of the storm centers during the first period of price regulation. Under date of October 1, 1917, Dr. Garfield said that, inasmuch as the President had not specifically fixed a price in his order of August 21, 1917, "coal specially prepared for use in smithing and sold for that purpose and for no other, may be sold at the market price prevailing at the time of the sale." This order, issued subject to further investigation, was confirmed a few days later, but was canceled February 15, 1918, when it was ruled that straight bituminous prices must apply. The final order on the subject, effective April 25, 1918, gave smithing shippers the advantages of the allowances for special preparation and permitted a charge to cover bagging when smithing was shipped in bags and of 50 cents per ton when smithing was loaded in box cars. This order was automatically revived with the renewal of price regulations.

PROVISIONS GOVERNING EXPORT AND BUNKER COAL

Prior to February 1, 1919, four orders had been issued covering the price on export and bunker coal, viz.:

1. On September 6, 1917, it was stated that export and bunker coal was subject to the President's scales on bituminous and anthracite.

2. On October 6, 1917, a regulation was issued which said that "the prices for coal fixed by the President, as modified by orders of the Fuel Administrator, shall apply to export and bunker coal."

3. On December 13, 1917, an order was issued providing that foreign bunker and export coal, except to Canada and Mexico, might be sold at \$1.35 per net ton mines over the prescribed maximum mine price on domestic business.

4. On February 25, 1918, this last order was reenacted subject to the provisions that invoices at the excess price could be made only by the dealer actually loading the coal into the foreign vessels and after coal had been so

loaded and that no jobber's or other commissions could be added to the \$1.35 per net ton. "Delivered * * * to vessels for foreign bunkering purposes" was defined to mean coal put in the bunkers of any vessel sailing from a tidewater port for any port outside the United States and Alaska, excepting naval vessels and army transports. The \$1.35 excess, it was further provided, should not apply to coal shipped to possessions or dependencies of the United States when consigned to any department of the United States Government.

The first ruling on prices at wagon mines, issued October 6, 1917, provided that coal sold direct to consumer by wagon or truck haul or to a railroad, would take the government price, plus the actual cost of hauling. Wagon mine coal loaded in box cars took an extra charge of 75 cents per ton, but other wagon mine coal f. o. b. cars was held to the maximum on tippie mines. Effective November 10, 1917, the regulations were amended to read:

"Coal sold at a mine to be delivered direct to the consumer by wagon or truck may be sold at a price f. o. b. mines to be fixed by the local Fuel Administration committee in the community in which the coal is delivered for consumption, subject to the approval of the State Fuel Administrator. Such local committee shall also fix the haulage rates to be charged where the coal is delivered by the mine operator."

For an account of the various changes in prices between August 21, 1917, and January 31, 1919, the reader is referred to the 46th annual edition of *THE COAL TRADE* (pp. 153-182), where the subject is treated in detail. The same edition (pp. 144-153) also contains an exposition of the theories underlying the price-fixing policies and methods of the United States Fuel Administration.

GOVERNMENT PRICES ON ANTHRACITE

Federal regulation of anthracite prices was in effect from September 1, 1917, to January 31, 1919. Unlike the case of bituminous (see "Fuel Administration Bituminous Price Schedules," ante) this control was not revived during the period of the general bituminous strike of last November and December. The initial government prices were named in an Executive order issued August 23, 1917. The base prices, per gross ton, mines, applicable to coal produced and sold by the Philadelphia & Reading Coal & Iron Co., Lehigh Coal & Navigation Co., Lehigh & Wilkes-Barre Coal Co., Hudson Coal Co., Delaware & Hudson Co., Scranton Coal Co., Lehigh Valley Coal Co., Coxse Bros. & Co., Pennsylvania Coal Co., Hillside Coal & Iron Co., Delaware, Lackawanna & Western R.R. Co., Delaware, Lackawanna & Western Coal Co., Susquehanna Coal Co., Susquehanna Collieries Co., Lytle Coal Co., and M. A. Hanna Coal Co.* were as follows:

	Broken	Egg	Stove	Chestnut	Pea
White Ash	\$4.55	\$4.45	\$4.70	\$4.80	\$4.00
Red Ash	4.75	4.65	4.90	4.90	4.10
Lykens Valley	5.00	4.90	5.30	5.30	4.35

*Subsequently the Hanna Co. was allowed the 75-cent differential.

These prices were exclusive of a five-cent premium for rescreening at Atlantic or lake ports for transshipment by water. Shippers other than those listed above were permitted to charge 75 cents above these prices.

By order effective October 1, 1917, the prices on pea were reduced 60 cents per gross ton.

Effective December 1, 1917, an advance of 35 cents on all sizes was granted to cover wage increases. On November 1, 1918, a second advance of \$1.05 was allowed.

The only regulation issued with respect to sizes smaller than pea became effective November 16, 1918, and placed the maximum on such coals 50 cents per gross ton less than that in effect on pea.

Instead of the usual 50-cent cut in April, there was a 30-cent reduction effective April 1 to August 31, 1918.

PRICES ON ARKANSAS AND VIRGINIA ANTHRACITE

All of the prices mentioned in the foregoing paragraphs applied to Pennsylvania anthracite. Regulations with respect to Arkansas and Virginia anthracite did not come into effect until January 5, 1918, and July 22, 1918.

The first regulation on Arkansas anthracite was issued by Federal Fuel Administrator Couch, effective January 5, 1918, and named the following prices:

	Grate	Egg	Stove	No. 4 Nut	Pea	Buckwheat	Slack
Bernice Mines	\$7.30	\$7.55	\$8.30	\$8.30	\$6.30	\$2.85	\$2.50
Spadra Mines	6.80	6.80	....	7.30	4.80	....	2.50

Prices on prepared sizes were made subject to the following discounts: April, 90 cents; May, 75 cents; June, 60 cents; July, 45 cents; August, 30 cents; September, 15 cents.

Effective May 15, 1918, prices on pea and large sizes were increased 45 cents.

Effective July 10, and subject to the same discounts, the following maxima were established:

	Grate	Egg	Stove	No. 4 Nut	Pea	Buckwheat	Slack
Bernice Mines	\$8.75	\$9.00	\$9.75	\$9.75	\$6.75	\$4.75	\$2.50
Spadra Mines	8.75	8.75	....	9.25	5.25	....	2.50

The first order on Virginia anthracite, effective July 22, 1918, named the following maxima per net ton: Egg, \$5.40; stove, \$5.75; nut, \$5.75; briquets, \$5.30; pea, \$4.60; buckwheat, \$1.55, and culm, 90 cents. By order effective August 29, the \$4.60 price was made applicable on pea "and smaller sizes." The Virginia prices were subject to a summer reduction of 30 cents between April 1 and August 31.

The United States Fuel Administration schedules upon beehive and by-product coke, which were suspended February 1, 1919, were treated in detail in the preceding edition of THE COAL TRADE, pages 190-193.

GOVERNMENT REGULATION OF RETAIL PRICES

Government regulation of retail prices on coal and coke during the first period of the United States Fuel Administration activities, viz., August, 1917, to February, 1919, was almost entirely a matter of state and local control. That state of affairs was not reached, however, until after considerable controversy. During the second period, viz., November 1, 1919, to March 31, 1920, the situation was more badly muddled than during the first period because the Fuel Administration proper was only the shadow of an organization. The United States Railroad Administration, through which it was functioning, refused to assume authority to hear petitions of retailers who felt that the gross margins fixed months before and inferentially revived by the Executive order of October 30, 1919 (see "Fuel Administration Bituminous Price Schedule," ante) were inadequate and unfair. Fair Price Commissions, set up by the Attorney General's department under the amended Lever law, proved in most cases, equally hopeless as a source of relief since all efforts to have prices submitted to and approved by them indorsed by Washington ended in failure. The upshot of the matter was that retailers finally adopted gross margins based upon current costs of operation. Every effort was made, however, to hold these as near to the old gross margins in effect under the Fuel Administration, as changed conditions would warrant.

During the first period of Fuel Administration regulation, the attempt to apply a hard and fast rule by which gross margins would not exceed 130 per

cent. of those in effect during 1915, subject to the further provision that said margins should not exceed those in effect during July, 1917, as promulgated in the Garfield retail order of October 1, 1917 (see pp. 194-196 of THE COAL TRADE, Vol. 45, for the complete text of this order) provoked such opposition from the retail trade that margins were fixed in accordance with actual costs of doing business, although there was complaint in some sections that the local Fuel Administration authorities refused to allow all proper items to be taken into account in arriving at the permissible gross margins.

One of the first communities to fix gross margins upon existing costs was Chicago. The schedule adopted, effective November 10, 1917, on orders of 50 tons or more where deliveries could be made in five-ton lots was as follows: Bituminous mine-run and screenings, \$1.70; prepared sizes, bituminous, \$1.95; smokeless mine-run, \$1.85; anthracite, \$2.05; on orders of less than 50 tons, the margins were 10 cents higher on bituminous and 15 cents on anthracite; on orders of less than five tons where deliveries of one ton or more were made, the increase was 25 cents over the base schedule on bituminous and 15 cents on anthracite. These margins included an allowance of 25 cents per ton profit on bituminous and 35 cents on anthracite. Special prices were made for less than ton deliveries, bag and carry-in business. A revision, effective June 29, 1918, named the following gross margins: Bituminous mine-run, screenings, No. 4 and 5, to users of 500 tons and over annually in one location (full load lots), \$1.85 per ton; bituminous mine-run, screenings, No. 4 and 5, to users of less than 500 tons annually in one location (full load lots), \$1.95; bituminous prepared sizes (full load lots), \$2.10; anthracite coal for deliveries in over half-ton lots, \$2.35; coke, \$2.35; smithing coal, \$2.20. For bituminous deliveries in less than load lots in amounts of over one-half ton, add to the following margins, 25 cents; for deliveries in half-ton lots or less, add to the foregoing margins, 45 cents. For anthracite deliveries in half-ton lots or less, add to the foregoing margins, 20 cents. Load lots of bituminous coal were to consist of five tons or more; load lots of anthracite of four tons or more. Dealers were not entitled to any excess over above margins on account of their own disability to deliver in full load lots.

During the severe weather of January, 1918, a temporary additional allowance was granted by the Cook County Fuel Administrator.

New York retail margins as finally revised upward January 1, 1919, were as follows:

Broken, \$2.50; egg, stove and chestnut, \$2.60; pea, \$2.30; buckwheat and smaller sizes, \$1.90; bituminous coal, \$2.10; coke, \$2.50. The increases granted were designed to care for higher wage scales.

Detroit, Mich., margins, after considerable bitter controversy, were finally fixed on a basis of \$2.75. During 1918, margins at the Twin Cities ranged from \$1.35 to \$2, as compared with \$1.16 to \$1.76 during the preceding year. Wisconsin Federal Fuel Administrator Fitzgerald fixed the following maximum gross margins applicable at dealers' yards: Anthracite, \$1.35 per ton; ex-dock bituminous, \$1.45; domestic Illinois or Indiana bituminous, \$1.70; coke, \$1.70. These margins were exclusive of delivery costs. They covered retail sales throughout the state, with the exception of Ashland, Green Bay, Kenosha, Manitowoc, Milwaukee, Racine, Sheboygan, Superior, Two Rivers and Washburn, for which special margins were established.

SPACE REQUIRED FOR STORING NET TON OF STEAM SIZES

Variety and Size	Cu. Ft. Dry	Cu. Ft. Wet	Carbondale:		
Scranton (D., L. & W.):			Buckwheat	39.21	37.73
Rice	39.90	38.46	Rice	36.36	.....
Buckwheat	39.22	37.73	Variety and Size	Cu. Ft.	Cu. Ft.
Barley	39.22	37.73	Dry		Wet
Lackawanna (D. & H.):			Barley	36.36	.....
Buckwheat	37.03	35.71	Mahanoy:		
Rice	.....	35.12	Buckwheat	34.49	.....
Barley	.....	35.12	Rice	35.70	.....
Wilkesbarre:			Barley	36.36	.....
Buckwheat	35.12	.....	Shamokin:		
Rice	34.48	.....	Buckwheat	34.52	.....
Barley	34.48	.....	Rice	36.43	.....
			Barley	38.68	.....
Average Buckwheat	.....	.....	
Average Rice	.....	.....	
Average Barley	.....	.....	

Though the same, the figures on wet Carbondale and Scranton buckwheat reached THE COAL TRADE from different sources.

In the case of small coals, or steam sizes, so much depends upon the moisture contained in or between the many particles thereof that figures given as the space occupied by a given weight can not be applied so precisely as in the case of the prepared sizes of coal. On this account rice and barley are practically about the same in specific gravity so far as actual practice is concerned, although, theoretically, the smallest coal requires the greatest amount of space. For these reasons as well as because of the fact that many cargoes are more or less mixed, the average figures given will be most interesting and practical.

The *Coal Trade Journal* offers for sale what are known as Area Cards, showing the volume of space required for the storage of prepared sizes of anthracite, as indicated by experiments with ten leading brands in five sizes, and also space required for representative bituminous coals. These are sold in pairs at the rate of \$1 per pair.

RETAIL COAL PRICES IN AMERICAN CITIES

Sidewalk delivery prices on coal at 51 American cities are shown in the table following. These figures, purporting to represent "the average retail prices of January 15 and July 15 of each year, 1913 to 1919, inclusive, and January, 15, 1920", are gathered by the Bureau of Labor Statistics at Washington, which states that the prices shown for bituminous "are averages made on the several kinds. The coal dealers in each city were asked to quote prices on the kinds of bituminous coal usually sold for household use." It is not contended, of course, that the quotations are all-inclusive, but inasmuch as they are presumably drawn from the same sources year by year, they have considerable comparative value.

Any survey of these figures, however, should not lose sight of the fact that the changes shown from time to time do not indicate whether advances or declines are due to: (1) Increased or decreased cost of coal, f. o. b. mines; (2) changes in the cost of handling through the yard; or, (3) increases or decreases in net profits. The influence of these factors is shown in a small way in the article appearing in another part of this edition under the caption of "Gross Retail Margins."

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City, and kind of coal	1913		1914		1915		1916		1917		1918		1919		1920	
	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July
Atlanta, Ga.:																
Pennsylvania anthracite—																
Stove	\$5.875	\$4.833	\$5.235	\$5.083	\$5.250	\$4.575	\$5.050	\$4.500	\$7.000	\$7.444	\$7.778	\$8.029	.....	\$14.687	.....	.....
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.667	.....	.....
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.250	\$9.050	.....
Baltimore, Md.:																
Pennsylvania anthracite—																
Stove	77.700	77.240	77.700	77.520	77.620	77.138	77.650	77.800	78.160	79.600	79.450	79.963	79.1750	79.1750	79.1750	79.1750
Chestnut	77.930	77.490	77.950	77.520	77.870	77.363	77.880	77.950	78.310	79.750	79.550	79.042	79.1850	79.1850	79.1850	79.1850
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79.540	79.540	79.540	79.540
Birmingham, Ala.:																
Bituminous	4.217	4.011	4.228	3.833	4.090	3.646	3.913	3.644	5.060	5.616	6.461	6.741	7.286	7.496	7.496	7.496
Boston, Mass.:																
Pennsylvania anthracite—																
Stove	8.250	7.500	8.000	7.500	7.750	7.500	8.000	8.000	9.500	9.850	10.250	12.000	12.000	12.000	12.750	12.750
Chestnut	8.250	7.750	8.250	7.750	8.000	7.750	8.250	8.000	9.500	9.850	10.250	12.000	12.000	12.000	12.750	12.750
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.500	9.500
Bridgeport, Conn.:																
Pennsylvania anthracite—																
Stove .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo, N. Y.:																
Pennsylvania anthracite—																
Stove	6.750	6.542	6.817	6.650	6.850	6.650	6.850	7.010	7.600	8.830	9.180	10.400	10.700	10.890	10.890	10.890
Chestnut	6.992	6.800	7.067	6.900	7.100	6.900	7.100	7.260	7.860	8.830	9.240	10.500	10.800	10.990	10.990	10.990
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Butte, Mont.:																
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Charleston, S. C.:																
Pennsylvania anthracite—																
Stove	38.375	37.750	37.750	37.750	37.750	37.750	37.750	37.875	38.750	42.275	.....	.....	.....	42.340	42.340	42.340
Chestnut	38.500	38.000	38.250	38.250	38.250	38.250	38.250	38.375	39.250	42.475	.....	.....	.....	42.500	42.500	42.500
Bituminous	46.750	46.750	46.750	46.750	46.750	46.750	46.750	46.750	7.000	8.000	8.375	8.500	8.500	8.500	8.500	8.500
Chicago, Ill.:																
Pennsylvania anthracite—																
Stove	8.000	7.800	8.080	7.900	8.100	7.900	8.100	8.240	9.570	10.350	10.900	11.808	12.200	12.580	12.580	12.580
Chestnut	8.250	8.050	8.330	8.130	8.350	8.150	8.350	8.480	9.670	10.388	10.975	12.016	12.300	12.680	12.680	12.680
Bituminous	4.969	4.650	5.000	4.350	5.068	4.708	4.988	4.800	7.083	6.671	6.475	6.700	7.017	8.020	8.020	8.020
Cincinnati, Ohio:																
Pennsylvania anthracite—																
Stove	8.250	7.500	8.000	7.917	7.917	7.967	8.000	7.875	10.000	9.500	11.660	.....	.....	12.000	12.500	12.500
Chestnut	8.750	7.750	8.250	8.167	7.833	7.833	8.083	8.125	10.125	9.500	.....	.....	.....	12.000	12.667	12.667
Bituminous	3.500	3.375	3.750	3.500	3.500	3.500	3.688	3.500	5.500	6.098	6.725	6.478	6.139	6.739	6.739	6.739
Cleveland, Ohio:																
Pennsylvania anthracite—																
Stove	7.500	7.250	7.500	7.500	7.650	7.400	7.650	7.850	9.688	9.825	.....	.....	.....	11.060	11.538	12.300
Chestnut	7.750	7.500	7.750	7.750	7.900	7.650	7.900	8.100	10.000	9.575	.....	.....	.....	11.175	11.650	12.283
Bituminous	4.143	4.143	4.400	4.671	4.643	4.607	4.643	4.946	8.287	6.901	6.443	6.821	7.710	7.911	7.911	7.911

City, and kind of coal	1913		1914		1915		1916		1917		1918		1919		1920	
	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July
Columbus, Ohio:																
Pennsylvania anthracite—																
Chestnut														12.00	12.00	
Bituminous														6.06	6.51	6.53
Dallas, Tex.:																
Pennsylvania anthracite—																
Chestnut																
Egg																
Arkansas anthracite—																
Bituminous	8.26	7.21	7.52	7.15	7.54	6.96	7.45	7.28	10.17	10.13	10.36	10.98	11.03	14.53		
Denver, Colo.:																
Colorado anthracite—																
Stove, 3 and 5 mixed.....	8.50	8.50	10.50	8.29	9.21	9.07	9.33	8.78	9.60	11.75	12.35	12.65	13.15	14.00		
Furnace, 1 and 2 mixed.....	8.75	9.00	11.00	9.07	9.28	9.07	9.33	9.07	9.90	11.75	12.35	12.65	13.50	13.50		
Bituminous	5.26	4.87	6.47	5.30	5.61	5.19	5.26	5.01	6.00	7.58	7.98	8.14	8.34	8.98		
Detroit, Mich.:																
Pennsylvania anthracite—																
Stove	8.00	7.45	8.00	7.50	7.98	7.50	7.95	8.00	9.75	9.80	10.15	11.60	11.80	12.65		
Chestnut	8.25	7.65	8.25	7.75	8.18	7.75	8.20	8.25	9.80	10.00	10.50	11.70	11.90	12.75		
Bituminous	5.20	5.20	6.20	5.18	5.17	5.27	5.27	5.61	7.53	8.27	8.18	7.72	7.98	8.71		
Fall River, Mass.:																
Pennsylvania anthracite—																
Stove	8.25	7.42	7.75	7.68	8.00	7.75	8.75	8.48	11.00	10.75	11.00	12.70	12.50	13.00		
Chestnut	8.25	7.61	8.00	7.68	8.00	7.75	8.75	8.48	11.00	10.75	11.00	12.38	12.25	12.75		
Bituminous												10.00	10.25	9.50	10.00	
Houston, Tex.:																
Bituminous													10.00	10.00	12.00	
Indianapolis, Ind.:																
Pennsylvania anthracite—																
Stove	8.95	8.00	8.30	7.75	8.25	7.65	8.25	8.50	10.17	9.25	10.25	12.25	12.25	13.00		
Chestnut	9.15	8.25	8.50	7.95	8.45	7.90	8.45	8.68	10.33	9.25	10.50	12.33	12.25	13.17		
Bituminous	3.51	3.70	4.61	4.00	4.67	4.28	4.11	4.58	6.90	7.10	6.13	6.87	7.37	8.18		
Jacksonville, Fla.:																
Pennsylvania anthracite—																
Stove	10.00	9.00	9.00	9.12	9.00	9.00	9.00	9.00	11.00	12.00			(*)	15.00	17.00	
Chestnut	10.00	9.00	9.00	9.12	9.00	9.00	9.00	9.00	11.00	12.00			(*)	15.00	17.00	
Bituminous	7.50	7.00	7.12	6.87	7.50	7.00	7.50	7.37	8.00	9.33	9.35	10.00	10.00	11.00		
Kansas City, Mo.:																
Pennsylvania anthracite—																
Stove														16.21	17.40	
Chestnut														16.47	17.62	
Arkansas anthracite—																
Furnace			8.28	7.97	8.33	7.83	8.33	8.12	9.22	12.52	13.70	15.10	13.53	15.95		
Stove, or No. 4.....			8.29	8.50	8.33	8.37	8.33	8.67	9.58	13.15	14.20	15.50	14.45	16.53		
Bituminous	4.31	3.95	4.27	4.03	4.20	4.06	4.51	4.35	6.48	6.78	6.70	7.34	7.49	8.35		
Little Rock, Ariz.:																
Arkansas anthracite—																
Egg																
Stove														12.97	12.50	
Bituminous	6.00	5.33	6.25	5.83	5.97	5.31	6.00	5.75	8.00	8.25	9.15	9.44	9.25	10.37		

THE COAL TRADE

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City, and kind of coal	1913	1914	1915	1916	1917	1918	1919	1920
Los Angeles, Calif.: New Mexico anthracite— Cerrillos egg..... Bituminous 12,500	Jan. July 17,000 13,500 12,000 12,000	Jan. July 15,000 15,000 13,800 11,375	Jan. July 18,000 16,000 13,700 12,900	Jan. July 15,000 15,000	Jan. July 22,000 20,000 14,881 14,700	Jan. July 21,150 14,688 14,583	Jan. 21,000 16,000
Louisville, Ky.: Pennsylvania anthracite— Stove	9,000	8,250 8,750 8,450 8,450	8,700 ..... .....	..... .....	..... .....	..... .....	(^c) 12,750 (^c) 12,750	13,750 13,750
Chestnut	9,000	8,250	8,750	8,450	.....	.....	.....	13,750
Bituminous	4,200	4,000	4,377	3,963	3,997	3,478	3,816	6,836
Manchester, N. H.: Pennsylvania anthracite— Stove	10,000	8,500	8,750	8,500	9,000	8,750	9,000	13,417
Chestnut	10,000	8,500	8,750	8,500	9,000	8,750	9,000	13,417
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	10,000
Memphis, Tenn.: Pennsylvania anthracite— Stove .....	.....	.....	.....	.....	.....	.....	.....	16,000
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	16,000
Bituminous	4,344	4,219	4,219	4,219	4,383	4,383	4,904	8,000
Milwaukee, Wis.: Pennsylvania anthracite— Stove	8,000	7,850	8,080	7,930	8,100	7,900	8,300	12,600
Chestnut	8,250	8,100	8,330	8,190	8,350	8,150	8,350	12,700
Bituminous	6,250	5,714	6,143	5,714	6,143	5,625	6,000	8,960
Minneapolis, Minn.: Pennsylvania anthracite— Stove	8,250	9,050	9,350	9,133	9,207	9,150	9,350	14,000
Chestnut	9,500	9,800	9,600	9,833	9,537	9,400	9,500	14,100
Bituminous	5,889	5,732	5,876	5,846	5,960	5,960	5,977	9,429
Mobile, Ala.: Pennsylvania anthracite— Stove .....	.....	.....	.....	.....	.....	.....	.....	17,000
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	17,000
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	10,333
Newark, N. J.: Pennsylvania anthracite— Stove	6,500	6,250	6,500	6,250	6,500	6,250	6,500	10,483
Chestnut	6,750	6,500	6,750	6,500	6,750	6,500	6,750	10,483
New Haven, Conn.: Pennsylvania anthracite— Stove	7,500	6,250	6,571	6,579	7,000	6,750	7,500	12,250
Chestnut	7,500	6,250	6,571	6,579	7,000	6,750	7,500	12,250
New Orleans, La.: Pennsylvania anthracite— Stove	10,000	10,000	10,000	10,125	10,500	11,700	13,100	17,500
Chestnut	10,500	10,500	10,500	10,625	11,000	12,200	13,300	17,500
Bituminous	4,056	4,063	4,944	4,071	4,950	4,063	4,063	9,269

THE COAL TRADE

City, and kind of coal	1913		1914		1915		1916		1917		1918		1919		1920
	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.	July	Jan.
New York, N. Y.:															
Pennsylvania anthracite—															
Stove	7 071	6 657	6 857	6 850	7 143	6 907	7 107	7 393	8 500	9 053	9 300	10 757	10 900	11 536	
Chestnut	7 143	6 800	7 000	6 993	7 293	7 057	7 250	7 421	8 500	9 063	9 283	10 764	10 857	11 600	
Norfolk, Va.:															
Pennsylvania anthracite—															
Stove .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 000	9 500	11 700	12 500	13 000	
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 000	9 500	11 700	12 500	13 000	
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7 750	7 750	8 250	9 375	9 750	
Omaha, Neb.:															
Pennsylvania anthracite—															
Stove	12 000	10 750	10 700	10 700	10 750	10 700	10 750	11 750	13 200	13 188	.....	.....	16 450	17 275	
Chestnut	12 000	11 000	10 950	11 000	10 950	11 000	10 950	11 400	13 400	13 328	.....	.....	16 550	17 450	
Bituminous	6 625	6 125	6 125	6 083	6 167	6 042	6 000	7 857	7 960	7 388	8 471	8 980	10 108		
Portia, Ill.:															
Pennsylvania anthracite—															
Stove .....	.....	.....	.....	.....	.....	.....	.....	.....	10 250	11 000	.....	.....	11 687	13 000	
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	10 500	11 025	.....	.....	11 750	13 000	
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	5 500	.....	5 500	6 550	6 550	6 000	
Philadelphia, Pa.:															
Pennsylvania anthracite—															
Stove	7 156	6 894	7 281	7 060	7 250	7 013	7 250	7 494	7 969	8 594	8 806	11 244	10 850	11 881	
Chestnut	7 376	7 144	7 531	7 300	7 500	7 263	7 500	7 744	8 138	8 651	8 838	11 319	10 950	11 906	
Pittsburgh, Pa.:															
Pennsylvania anthracite—															
Stove	7 938	7 375	7 713	7 550	7 875	7 587	7 967	8 000	10 500	.....	11 000	12 750	12 750	13 750	
Chestnut	8 000	7 438	7 775	7 560	7 933	7 567	8 017	8 100	10 850	10 160	11 060	12 700	12 663	14 000	
Bituminous	8 158	8 176	8 188	8 158	8 225	8 225	8 326	8 460	4 867	5 278	5 656	6 000	5 833	6 179	
Portland, Me.:															
Pennsylvania anthracite—															
Stove .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 880	11 040	13 000	12 200	13 440	
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 890	11 040	13 000	12 200	13 440	
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 463	10 880	10 853	8 573	9 370	
Portland, Oreg.:															
Bituminous	9 786	9 656	9 625	9 279	9 382	9 224	9 498	9 283	10 276	10 181	10 442	10 586	11 498	11 618	
Providence, R. I.:															
Pennsylvania anthracite—															
Stove	8 250	7 500	7 750	7 450	7 750	7 500	8 750	8 500	10 000	10 500	11 375	12 400	12 000	12 950	
Chestnut	8 250	7 750	8 000	7 700	8 000	7 750	9 000	8 500	10 000	10 500	11 375	12 400	12 000	13 000	
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 500	9 000	10 000	
Richmond, Va.:															
Pennsylvania anthracite—															
Stove	8 000	7 250	7 750	7 542	8 000	7 500	7 900	8 000	9 450	9 500	9 900	11 500	12 000	12 125	
Chestnut	8 000	7 250	7 750	7 542	8 000	7 500	7 900	8 000	9 450	9 500	9 900	11 500	12 000	12 125	
Bituminous	5 500	4 944	5 423	5 042	5 444	5 023	5 364	5 063	7 288	7 686	7 811	8 222	8 464	8 931	
Rochester, N. Y.:															
Pennsylvania anthracite—															
Stove .....	.....	.....	.....	.....	.....	.....	.....	.....	7 750	8 550	9 050	10 300	10 600	10 900	
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	.....	7 450	7 900	8 650	9 150	10 400	10 700	

City, and kind of coal	Jan. 1918	Jan. 1914	Jan. 1915	Jan. 1916	Jan. 1917 ²	Jan. 1918	Jan. 1919	Jan. 1920
St. Louis, Mo.:								
Pennsylvania anthracite—								
Stove	8.438	8.150	8.933	8.583	9.813	10.433	.....	12.900
Chestnut	7.990	8.360	8.963	8.760	10.060	10.533	.....	13.225
Bituminous	3.360	3.233	3.066	3.179	3.073	4.615	5.893	5.970
St. Paul, Minn.:								
Pennsylvania anthracite—								
Stove	9.050	9.333	9.183	9.350	9.883	10.350	12.248	13.900
Chestnut	9.900	9.533	9.433	9.600	10.133	10.600	12.417	14.100
Bituminous	6.041	6.121	6.089	6.167	6.153	6.203	9.143	11.531
Salt Lake City, Utah:								
Colorado anthracite—								
Furnace, 1 and 2 mixed	11.000	11.500	.....	11.500	11.563	11.714	11.429	16.313
Stove, 3 and 5 mixed	11.000	11.500	11.472	11.500	11.571	11.786	11.429	16.583
Bituminous	5.639	5.458	5.580	5.552	5.462	5.464	7.260	8.236
San Francisco, Calif.:								
New Mexico anthracite—								
Cerillos egg	17.000	17.000	17.000	16.833	16.833	17.000	17.000	23.000
Colorado anthracite—								
Egg	17.000	17.000	17.000	16.833	16.833	17.000	17.000	21.750
Bituminous	12.000	12.000	12.000	12.273	12.333	12.250	13.429	15.100
Savannah, Ga.:								
Pennsylvania anthracite—								
Stove .....	.....	.....	.....	.....	.....	.....	.....	15.100
Chestnut .....	.....	.....	.....	.....	.....	.....	.....	16.100
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	11.100
Scranton, Pa.:								
Pennsylvania anthracite—								
Stove	4.250	4.313	4.500	4.433	4.125	4.375	4.900	7.833
Chestnut	4.500	4.563	4.750	4.683	4.313	4.625	4.900	8.300
Seattle, Wash.:								
Bituminous	7.125	7.200	7.617	75.900	75.906	75.313	75.750	75.163
Springfield, Ill.:								
Bituminous .....	.....	.....	.....	2.646	2.078	2.094	2.750	3.961
Washington, D. C.:								
Pennsylvania anthracite—								
Stove	7.500	7.381	7.538	7.419	7.731	7.625	7.725	11.911
Chestnut	7.850	7.531	7.738	7.569	7.391	7.550	7.856	12.011
Bituminous .....	.....	.....	.....	.....	.....	.....	.....	12.538

¹ Prices not secured by Bureau in July, 1917.
² Zoned out by Fuel Administration.
³ Per gross ton.
⁴ At yard, delivery \$0.05 to \$2, according to distance.
⁵ Per ton of 2,240 pounds.
⁶ Per 10 barrel lots (1,900 pounds).
⁷ Per 25 bushel lots (1,900 pounds).
⁸ Prices in zone A.

The next table shows for the United States both average and relative retail prices of Pennsylvania white ash coal, stove and chestnut sizes, and of bituminous coal on January 15 and July 15 of each year, 1913 to 1919, inclusive, and January 15, 1920. An average price for the year 1913 has been made from the averages for January and July of that year. This average price for the year 1913 has been divided into the average prices for January and July of each year to obtain the relative prices.

January, 1920, compared with January, 1913, shows an increase of 64 per cent. in the price of Pennsylvania white ash stove coal; 62 per cent. in the price of chestnut; and 63 per cent. in the price of bituminous coal. January, 1920, compared with January, 1919, shows an increase of 10 per cent. in the price of Pennsylvania white ash stove; 11 per cent. in the price of chestnut and 12 per cent. in the price of bituminous.

Year and month	Pennsylvania anthracite, white ash Stove		Chestnut		Bituminous	
	Average price	Relative price	Average price	Relative price	Average price	Relative price
1913:						
Average for year.....	7.73	100	7.91	100	5.43	100
January	7.99	103	8.15	103	5.48	101
July	7.46	97	7.68	97	5.39	99
1914:						
January	7.80	101	8.00	101	5.97	100
July	7.60	98	7.78	98	5.46	101
1915:						
January	7.83	101	7.99	101	5.71	105
July	7.54	98	7.73	98	5.44	100
1916:						
January	7.93	103	8.13	103	5.69	105
July	8.12	105	8.28	105	5.52	102
1917:						
January	9.29	120	9.40	119	6.96	128
July	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
1918:						
January	9.88	128	10.03	127	7.68	141
July	9.96	129	10.07	127	7.92	146
1919:						
January	11.51	149	11.61	147	7.90	145
July	12.16	157	12.19	154	8.10	149
1920:						
January	12.66	164	12.79	162	8.83	163

¹ Prices not secured by Bureau in July, 1917.

GROSS RETAIL MARGINS

The cost of handling coal at retail naturally varies in each city and with each dealer. Until very recently compilations of current costs and profits were not available, and even today many cities and individual companies engaged in the retail trade in those communities are adverse to making public costs figures covering their operations. A number of representative figures, however, were gathered by the National Retail Coal Merchants' Association early in 1920 for submission to the Frelinghuysen subcommittee of the United States Senate then investigating the coal situation. From the exhibits then filed, the following figures are presented:

CHICAGO
CHICAGO RETAIL PRICE STRUCTURE—COSTS AND PROFITSSept. 1919, compared with Jan. 1919
(All figures per net ton 2,000 pounds unless otherwise specified)

Company B	Anth. Egg			Anth. Stove			Anth. Nut			Anth. Pea			Ill. Bit. Egg & Nut			Cost of Retail- ing	Profit
	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1		
Mine price pd.....	\$5.88	\$6.46	\$6.10	\$6.69	\$6.21	\$6.90	\$4.54	\$5.12								1.94	0.20†
Freight & Tax.....	5.26	5.77	6.46	5.97	5.56	6.07	4.06	4.57									
	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13									
FOB Dir's Yard.....	9.38	9.90	9.68	10.10	9.68	10.20	8.18	8.70								2.88	.11 Loss
Retail Margin.....	2.34	2.30	2.32	2.30	2.32	2.30	2.32	2.30									
Retail Selling Price..	11.72	12.20	11.90	12.40	12.00	12.50	10.50	11.00									
Company 2																	
Mine price pd.....	\$6.04	\$7.14	\$6.17	\$7.26	\$6.27	\$7.07	\$4.51									1.448	.492
Freight & Tax.....	5.29	6.37	6.51	6.57	5.90	6.67	4.06										
	4.13	4.13	4.13	4.13	4.13	4.13	4.13										
FOB Dir's Yard.....	9.52	10.50	9.64	10.70	9.82	10.20	8.18										
Retail Margin.....	2.43	1.70	2.46	1.70	2.43	1.70	2.82										
Retail Selling Price..	11.96	12.20	12.10	12.40	12.26	12.90	11.00									1.923	.493†
Company 3																	
Mine price pd.....	\$5.90	\$6.50	\$6.12	\$6.72	\$6.23	\$6.83	\$4.58	\$5.16								1.437	.313
Freight & Tax.....	5.27	5.90	5.47	6.00	5.57	6.10	4.07	4.60									
	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13									
FOB Dir's Yard.....	9.40	9.93	9.60	10.13	9.70	10.28	8.20	8.73									
Retail Margin.....	2.86	2.27	2.35	2.27	2.36	2.27	2.20	2.27								2.012	.266 Loss
Retail Selling Price..	11.75	12.20	11.96	12.40	12.06	12.50	10.40	11.00									
Company No. 1 Year ending 12/31/18.....																	1.519
No. 4 Year ending 3/31/19.....																	1.468
No. 5 Year ending 12/31/18.....																	2.038
No. 6 Year ending 3/31/19.....																	.086 Loss
No. 7 Year ending 3/31/19.....																	1.829
No. 8 Year ending 3/31/19.....																	1.904
No. 9 Year ending 3/31/19.....																	.285
No. 10 Year ending 3/31/19.....																	.283†
No. 11 Year ending 3/31/19.....																	1.974
No. 12 Year ending 3/31/19.....																	.364 Loss
No. 13 Year ending 3/31/19.....																	.067 "†
No. 14 Year ending 3/31/19.....																	2.14
No. 15 Year ending 3/31/19.....																	.279 "
No. 16 Year ending 3/31/19.....																	1.010

* Gross Ton.

† Before deducting profits tax.

THE COAL TRADE

KANSAS CITY, MISSOURI BITUMINOUS COAL PRICE STRUCTURE

Company No. 19	Mine price (May include Wholesale Com'n)	Freight	War Tax	F. O. B. Cars Kansas City	Retail Margin	Retail Sell- ing Price
Cherokee Lump:						
1916 Jan.	1.95	.90	..	2.85	1.65	4.50
July	1.95	.90	..	2.85	1.65	4.50
1919 Sept.	3.41	1.40	.04	4.85	2.65	7.50
1920 .....	..	..	..	..	..	..
Company No. 10						
Cherokee (So. Kansas)						
1916 Jan.	1.90	.90	..	2.80	1.95	4.75
July	2.25	.90	..	3.15	1.35	4.50
1917 Jan.	3.98	.90	..	4.88	1.62	6.50
1918 Jan.	3.40	.90	.03	4.33	2.22	6.55
1919 Jan.	3.86	1.05	.03	4.94	2.56	7.50
Aug.	3.75	1.40	.04	5.19	2.56	7.75
Sept.	3.51	1.40	.04	4.95	2.80	7.75
1920 Jan. ....	..	1.40	.04	..	..	..
April 30, 1917	41c per ton profit					
April 30, 1918	37c per ton profit					
April 30, 1919	34c per ton loss and for the period May 1 to June 30, 1919,					
95c per ton loss was realized.						

CHICAGO, ILLINOIS
BITUMINOUS COAL PRICE STRUCTURE

Company No. 1	Mine Price (May include Wholesale Com'n)	Freight	War Tax	F.O.B. Cars Chicago	Retail Margin	Retail Sell- ing Price Del'd on Sidewalk*
So. Ill. Lump						
1917 Jan.	3.01	1.10	..	4.11	2.49	6.50
1918 Jan.	2.76	1.25	.04	4.05	2.70	6.75
1919 Jan.	2.69	1.55	.05	4.29	1.96	6.25
July	2.90	1.55	.05	4.50	1.75	6.25
1920 Jan. ....	..	1.55	.05	..	..	..
Company No. 2						
So. Ill. Lump						
1916 Jan.	2.45	1.05	..	3.50	1.25	4.75
July	2.50	1.05	..	3.55	1.25	4.80
1917 Jan.	3.75	1.05	..	4.80	1.70	6.50
1918 Jan.	2.65	1.25	.04	3.94	2.46	6.40
1919 Jan.	2.65	1.55	.05	4.25	2.00	6.25
Aug.	3.20	1.55	.05	4.80	1.45	6.25
Sept.	3.30	1.55	.05	4.90	1.60	6.50
1920 Jan. ....	..	1.55	.05	..	..	..

Company No. 1: Net profit per ton, all coal, calendar year 1918, 45.8; January 1 to June 30, 1919, 44.3.

Company No. 2: Net profit per ton, on all coal, including anthracite, year ending March 31, 1918, 70.0 (under Fuel Administration); March 31, 1919, 49.2 (under Fuel Administration); three months, April 1 to June 30, 1919, 49.3 (not under Fuel Administration).

* Extra charge for carrying in, bagged, 60c; wheeling in 45c.

PHILADELPHIA RETAIL PRICE STRUCTURE
Jan. 1919, compared with Sept. 1919—(All figures per gross ton, 2,240 pounds)

	Egg			Stove			Chestnut			Pea			Cost of Retailing All Coal	Profit All Coal
	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1	Jan. 1	Sept. 1	Jan. 1		
Anthracite														
Company No. 2														
Mine price, pd.....	5.90	6.95	6.10	7.35	6.40	7.45	4.90	5.50					2.217	.283†
Freight & Tax.....	2.06	2.06	2.06	2.06	2.06	2.06	1.95	1.95						
F.O.B. Dir's Yard.....	7.96	9.00	8.15	9.40	8.45	9.50	6.75	7.35					2.788	.43
Retail Margin.....	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50						
Retail Selling Price....	10.45	11.50*	10.65	11.90*	10.95	12.00*	9.25	9.85*						
Company No. 3														
Mine price, pd.....	6.10	7.05	6.95	7.30	6.70	7.40	4.95	5.25					2.13	.15†
Freight & Tax.....	2.06	2.06	2.06	2.06	2.06	2.06	1.95	1.95						
F.O.B. Dir's Yard.....	8.15	9.10	9.00	9.35	8.75	9.45	6.80	7.10					2.60	.20
Retail Margin.....	2.50	2.40	2.50	2.40	2.50	2.30	2.50	2.45						
Retail Selling Price....	10.65	11.50	11.50	11.75	11.25	11.75	9.30	9.55						
Company No. 4														
Mine price, pd.....	5.95	6.45	6.15	6.95	6.35	6.85	4.65	5.10					2.00	.48†
Freight & Tax.....	2.15	2.15	2.15	2.15	2.15	2.15	1.95	1.95						
F.O.B. Dir's Yard.....	8.10	8.60	8.30	9.10	8.50	9.00	6.60	7.05					2.17	.34†
Retail Margin.....	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50						
Retail Selling Price....	10.60	11.10	10.80	11.60	11.00	11.50	9.10	9.55						
Company No. 5														
Mine price, pd.....	6.30	6.90	6.60	7.15	6.90	7.25	5.25	5.10					2.353	.199
Freight & Tax.....	2.15	2.15	2.15	2.15	2.15	2.15	1.95	1.95						
F.O.B. Dir's Yard.....	8.45	9.05	8.75	9.30	9.05	9.40	7.20	7.05						
Retail Margin.....	2.45	2.20	2.45	2.45	2.35	2.35	2.40	2.50						
Retail Selling Price....	10.90	11.25	11.20	11.75	11.40	11.75	9.60	9.55						
Company No. 6														
Mine price, pd.....	6.35	7.10	6.60	7.35	6.85	7.45	5.25	5.30					2.194	.011
Freight & Tax.....	1.95	1.95	1.95	1.95	1.95	1.95	1.75	1.75						
F.O.B. Dir's Yard.....	8.30	9.05	8.55	9.30	8.80	9.40	7.00	7.05						
Retail Margin.....	2.50	2.05	2.50	2.30	2.45	2.10	2.50	2.50						
Retail Selling Price....	10.80	11.10	11.05	11.60	11.25	11.50	9.50	9.55						
Company No. 7														
Mine price, pd.....	6.40	7.10	7.00	7.35	7.10	7.55	5.70	5.20					2.002	.443†
Freight & Tax.....	2.05	2.05	2.05	2.05	2.05	2.05	1.95	1.95						
F.O.B. Dir's Yard.....	8.45	9.15	9.05	9.40	9.15	9.60	7.55	7.05					2.28	.10†
Retail Margin.....	2.45**	2.10	2.45**	2.35	2.45**	2.15	2.45**	2.45						
Retail Selling Price....	10.90	11.25	11.50	11.75	11.60	11.75	10.00	9.50						

* Since Sept. 1st, these prices have been reduced to \$11.25, \$11.75, \$11.75, and \$9.50, respectively, due to receipt of some lower cost coal.
** Average of all sizes.
† Before deducting profits tax.

THE COAL TRADE

ST. PAUL-MINNEAPOLIS
ST. PAUL-MINNEAPOLIS BITUMINOUS COAL PRICE STRUCTURE

	Mine Price	Freight	War Tax	F. O. B. Cars St. Paul and Minneapolis	Retail Margin	Retail Selling Price
Hocking Lump:						
1913 Jan.	3.75	.90	..	4.65	1.35	6.00
July	3.55	.90	..	4.45	1.35	5.80
1917 Jan. ....	..	.90	..	..	..	8.05
July .....	..	.90	..	..	..	9.80
Sept.	6.75	1.11	..	7.86	1.94	9.80
1919 Jan.	6.18	..	..	..	..	9.87
July	5.25	1.40	.04	6.69	2.25	8.94
Sept.	5.25	..	..	..	..	8.95
1920 Feb. 1	6.25	1.40	.04	7.69	2.25	9.94
Youghiogheny Lump:						
1913 Jan.	3.75	.90	..	4.65	1.35	6.00
July	3.55	.90	..	4.45	1.35	5.80
1917 Jan. ....	..	.90	..	..	..	8.05
July .....	..	.90	..	..	..	9.80
Sept.	6.75	1.11	..	7.86	1.94	9.80
1919 Jan.	6.18	..	..	..	..	9.87
July	5.35	1.40	.04	6.70	2.25	9.04
Sept.	5.35	..	..	..	..	9.05
1920 Feb. 1	6.50	1.40	.04	7.94	2.25	10.19
Pocahontas Lump:						
1913 Jan.	5.25	.90	..	6.15	1.85	8.00
July	4.75	.90	..	5.65	1.85	7.50
1917 Jan. ....	..	.90	..	..	..	9.65
July .....	..	.90	..	..	..	10.80
Sept.	7.70	1.11	..	8.81	2.14	10.95
1919 Jan. ....	..	..	..	..	..	10.77
July	8.00	1.40	.04	9.44	2.65	12.09
Sept.	8.50	..	..	..	..	12.70
1920 Feb. 1	9.00	1.40	.04	10.44	2.65	13.09

CLEVELAND, OHIO

Figures covering the operations of ten leading Cleveland retailers, as presented to the Cuyahoga Fair Price Committee in January, 1920, when the Cleveland trade was seeking to have the old (1917-18) Fuel Administration gross margin revised showed the following:

	Cost May 1, 1919		Increased Cost Dec. 1, 1919 over	
	Total	Per ton	Oct. 1, '17 Per ton	May 1, 1919 Per ton
All salaries.....	\$181,440.11	\$0.415	\$0.286	\$0.041
Labor (all labor outside of office except teamsters)	86,759.15	.198	.123	.025
Labor (teamsters' wages)	201,291.27	.475	.296	.059
Taxes	13,383.35	.036	.028	....
Insurance	19,158.26	.043	.021	....
Upkeep of wagons and teams.....	127,303.27	.300	.161	....
Upkeep of trucks.....	29,860.37	.070	.043	....
Bad accounts.....	6,902.55	.015	.015	....
Miscellaneous expense (postage, tele- phone, stationery, fuel, light and interest)	47,954.50	.109	.084	....

Rent paid or interest on real estate owned	57,813.81	.130	.118	....
Shrinkage, wastage, shortage and car service	27,544.23	.063	.041	....
Depreciation (buildings and improvements, office fixtures, horses, wagons, etc.)	51,066.43	.117	.093	....
Total expense.....	\$849,477.30	\$1.971	\$1.309	\$0.125
Domestic tonnage.....	243,451		56 per cent.	
Apartment house tonnage.....	88,454		20 per cent.	
Steam tonnage.....	104,800		24 per cent.	
Total tonnage.....	436,705		100 per cent.	
Yard tonnage.....	12,723			
Delivered tonnage.....	423,982			
Government margin:				
Domestic tonnage.....	56 per cent.	\$2.30	\$2.15	52 per cent.
Apartment tonnage.....	20 per cent.	2.15	2.00	22 per cent.
Steam tonnage.....	24 per cent.	1.58	1.43	26 per cent.
Average return.....		\$2.097		\$1.929
Cost		1.971		1.309
Net margin of safety and profit.....		\$0.126		\$0.620
Average return, December 1, 1919.....				\$2.097
Cost, May 1, 1919.....				\$1.971
Increase, December 1, 1919.....				.125
on Items Reported.....				2.096
				\$0.00 <i>i</i>

COAL CONSUMPTION OF VARIOUS CITIES

Accurate figures upon consumption of coal in various cities have always been difficult to obtain because of the lack of basic statistical records in proper form. For certain cities detailed records have been collected by trade or railroad associations and these, as well as others collected by the publisher of *THE COAL TRADE* and the *Coal Trade Journal*, appear in other sections of this volume.

An attempt to closely approximate the consumption at some of the leading cities was made by the Federal Trade Commission in its investigations of the coal situation in 1916 and the early part of 1917. Its extended report upon the subject gave the following consumption data:

Chicago and territory immediately adjacent, 23,000,000 tons of bituminous and 3,500,000 tons of anthracite in 1916.

Milwaukee, 500,000 to 600,000 tons of anthracite in 1916.

Minneapolis and St. Paul, 425,000 tons of anthracite in 1916.

Detroit, 600,000 to 700,000 tons of anthracite in normal years, but more in 1916 owing to industrial growth and consequent increase in population.

Buffalo, 450,000 tons of anthracite in 1916.

Niagara Falls, 125,000 tons of anthracite in 1916.

Rochester, 400,000 tons of anthracite in 1916.

New York, 7,000,000 tons of anthracite annually in Manhattan, Bronx and Queens boroughs.

Boston, 1,575,000 tons of anthracite in 1915.

COOPERATION INVITED

In a work of the character of THE COAL TRADE, covering as it does thousands of figures on production and distribution, the possibility of errors creeping into the compilation and printing is practically inescapable. Every effort is made to have this work one hundred per cent. accurate, but the labor is human and, therefore, fallible. The editor and publisher would, therefore, greatly appreciate having any errors discovered by the reader brought to their attention.

GOVERNMENT DISTRIBUTION OF BITUMINOUS COAL

Nothing approaching the elaborate zoning system of 1918-19, described in detail in the preceding edition of THE COAL TRADE (pp. 195-199) was in effect during the year ended March 31, 1920. From the date of the suspension of the zone system, February 1, 1919, until November 1, 1919, coal was free to follow its natural channels of distribution. A few hours before the general bituminous strike became effective, control of all bituminous coal then on wheels, as well as that subsequently mined, was vested by government order in the hands of the United States Railroad Administration. Class priorities were hurriedly re-established and regional and district committees set up in various parts of the country to feed out the tonnage loaded in accordance with the general priorities and the judgment of the committee members as to individual needs. The Tidewater Coal Exchange, which had been limping along as a railroad organization without authority to compel shippers to consign their tidewater business to its pools, was again clothed with full powers over tidewater business. The permit system on exports was reestablished, and for a time, overseas shipments were virtually suspended. Export dumpings at North Atlantic ports dropped from 1,819,000 tons in October to 230,000 tons in November and 182,000 tons in December.

The text of the priority order was as follows:

Washington, D. C., October 31, 1919.

Acting under authority conferred on me by the President of the United States under and by virtue of authority conferred upon him by the Act of Congress approved August 10, 1917, I hereby revoke the order of the United States Fuel Administrator issued January 31, 1919, insofar as it suspended the order of the United States Fuel Administrator of January 14, 1918, effective 7 o'clock a. m., January 15, 1918, and the portion of the order of the United States Fuel Administrator of May 25, 1918, setting up preference lists, and I hereby restore the said order of January 14, 1918, and said portion of the order of May 25, 1918, to like effect as if they had not been suspended; and I designate the Director General of Railroads and his representatives to carry into effect the said order of January 14, 1918, and to make such diversions of coal which the railroads under his direction may as common carriers have in their possession, as may be necessary in the present emergency to provide for the requirements of the country in order of priority set out in the preference list included in the order of the United States Fuel Administrator of May 25, 1918, as follows:

- (a) Railroads; (b) Army and Navy, together with other departments of the federal government; (c) State and county departments and institutions; (d) Public utilities; (e) Retail dealers; (f) Manufacturing plants on War Industries Board's Preference List; (g) Manufacturing plants not on War Industries Board's Preference List; (h) Jobbers; (i) Lake; (j) Tidewater.

This order to be effective at once.

HINES ISSUES DISTRIBUTION RULES TO CARRIERS

Detailed rules governing the procedure to be followed in handling commercial coal diverted under instructions of the Railroad Administration were issued from Mr. Hines' office November 1, 1919. These rules provided:

1. Bituminous coal, including lignite, taken and held in accordance with the instructions of the Director General of October 29 and 31, 1919, or thereafter, will be handled by the Director General and the regional directors through the agency of a Central Coal Committee at Washington and regional coal committee which will be established jointly by the regional directors and the Fuel Administration. Such regional coal committee will comprise the following representatives: one appointed by the United States Fuel Administrator and such others as the regional director may select to handle in matters of purchase, distribution and accounting.

2. The bituminous coal held must be distributed only to those consumers who have no reserve supply and must have coal to meet their emergency needs. The following order of preference shall govern the regional coal committee in such distribution as they may make within their jurisdiction for emergency consumption in the United States and Canada: (a) Railroads. (b) Army and Navy, together with other departments of the federal government. (c) State and county departments and institutions. (d) Public utilities. (e) Retail dealers. (f) Manufacturing plants on War Industries Board's preference list. (g) Manufacturing plants not on War Industries Board's preference list. (h) Jobbers. (i) Lake. (j) Tidewater.

3. When commercial coal is diverted to other than original consignee, promptly notify shipper and original consignee of each car and keep adequate record for later settlement.

4. Originating coal roads should hold a considerable portion of the commercial coal near coal waybilling points, available for prompt distribution.

5. Intermediate and terminal carriers should, as far as practicable, move commercial coal to, and hold it in the vicinity of, points most convenient for prompt rehandling and distribution.

6. Coal must not be delivered to commercial consumers either in accordance with the priority list (established in Rule 2) or otherwise, except with specific authority from the coal committee having jurisdiction.

7. Regional directors will immediately notify each railroad under federal control of the regional coal committee with which it shall deal.

8. Each railroad shall report at once to the Central Coal Committee and to the regional coal committee the name, title, location and telephone address of the representative in whom this whole matter will be centered for that railroad.

9. In order that the Central Coal Committee may be informed of the requirements for coal in each region of the necessity for transferring coal from one region to another, each regional coal committee will make such daily report to the Central Coal Committee as are provided for herein and may be called for from time to time.

10. Each railroad (or each grand division of a railroad) shall report daily by wire to the regional coal committee, to be received not later than 9.00 a. m., information as to its coal situation for the 24 hours ending at 1.00 a. m. that day.

11. Each regional coal committee will report daily by wire to the Central Coal Committee, as promptly as information is available, a summary of the coal situation for the 24 hours ending at 1.00 a. m. that day.

12. Applications to regional coal committees for delivery of coal to commercial consumers must be made through the railroad which will make delivery of the coal; such applications must show complete and accurate information with respect to the preferred nature of the requirements, the amount of coal which the applicant has on hand, and the amount which the applicant requires for the preferred use, together with the rate of consumption and the kind and size of the coal desired, all as set forth in Form C attached hereto.

13. Each regional coal committee will apply a consecutive number to all orders authorizing the delivery of coal and compliance with such orders must be reported promptly by the railroad to the regional coal committee.

14. Coal diverted for commercial uses shall be paid for in accordance with the Fuel Administrator's order dated January 14, 1918. In order to insure payments coal shall be diverted for commercial use to such applicants only who shall satisfy the federal or general manager of their financial responsibility or who shall deposit a certified check or other satisfactory security in such sum that will insure full payment for any coal furnished. The applicant shall make definite written obligation to pay the shipper for the coal promptly upon presentation of bill. The legal transportation charges, including war taxes, from mines to point of delivery to the applicant, will be collected on delivery in the usual way.

PERSONNEL OF COAL COMMITTEES

The Central Coal Committee mentioned in the foregoing instructions was headed by H. B. Spencer, director of the division of purchases of the United States Railroad Administration. Other members of the committee were: S. Porcher, M. Brice Claggett, E. J. Roth, P. H. Phillips, S. C. Wright, S. M. Whittaker, A. G. Gutheim, S. E. Freund and H. Y. Saint. The personnel of the regional committees as originally announced was:

REGIONAL COAL COMMITTEES

Southwest Region: St. Louis, Mo.: P. H. Greenlaw, chairman; C. A. How, Z. W. Brice, J. G. Livengood.

Southern Region: Atlanta, Ga.: A. M. Smith, chairman; J. J. King, Horace Epes, F. H. Fechtig, S. L. Yerkes, G. W. Lamb.

Northwest Region: Chicago, Ill.: T. W. Proctor, chairman; George W. Reed.

Central Western Region: Chicago, Ill.: B. J. Rowe, chairman; P. Hunter, F. C. Honnold.

Eastern Region: New York City: G. N. Snider, chairman; A. K. Morris, R. D. Starbuck, A. E. Russell, E. B. Wight, H. L. Ingersoll, J. W. Searles.
Allegheny Region: Philadelphia, Pa.: J. B. Fisher, chairman; E. H. Bankard, W. S. Yeatts, J. W. Laurel, G. C. Foedisch.
Pocahontas Region: Roanoke, Va.: D. E. Spangler, chairman; E. J. Howe (Fuel), F. L. Poindexter, E. T. Burnett, J. W. Cox, T. D. Hobart.

DISTRICT COAL COMMITTEES

The chairmen of the district coal committees were:

New York: G. N. Snider, chairman, coal traffic manager, New York Central.
New England: Boston: P. R. Todd, chairman, president, Boston & Albany R.R.
Cincinnati: H. A. Worcester, chairman, district director.
Detroit: P. G. Findlay, general freight agent, Michigan Central R.R.
Lake—Cleveland: H. M. Griggs, manager, Ore and Coal Exchange.
Kansas City: W. M. Corbett, chairman, general manager, Kansas City Term. R.R.
Omaha and Council Bluffs: Wm. Jeffries, chairman, general manager, Union Pacific R.R.
Des Moines: C. W. Jones, chairman, assistant general manager, Rock Island R.R.
Peoria: H. D. Page, chairman.
Duluth: W. H. Groverman, chairman.
Pittsburgh: E. A. Peck, chairman; chairman, Pittsburgh Operating Committee.

Restrictions upon bunkering and export loading were among the first steps taken at the time of the strike. Exports were shut off, then bunkering of foreign vessels, except a quantity sufficient to carry them to the next port of call, and finally, on December 4, came the flat prohibition which read:

"Effective 1.00 a. m. December 5 bunkering for all foreign flag vessels must be discontinued at all ports, and such vessels notified that they must secure their bunker coal elsewhere than at United States ports. This cancels our wire of November 25 authorizing bunkering of foreign flag vessels then in port to reach first bunkering station enroute to destination.

"Effective 1.00 a. m. December 5 coal for bunkering American flag vessels clearing for foreign countries, other than those engaged regularly in the passenger trade, will not be furnished except on permit approved by this committee."

American flag vessels in passenger trade were compelled to get permits which were passed upon by the Tidewater Coal Exchange at the port of departure, as heretofore. American flag vessels in freight trade were compelled to get permits from the Central Coal Committee at Washington, the same to be applied for through the Tidewater Coal Exchange at the port of departure.

A few days later the authorities tightened the rules by putting anthracite upon the same basis as bituminous for bunkering. Preference, under the permit system in effect, was given to vessels taking from 50 to 75 per cent. steam sizes of anthracite.

Effective December 15, two days after the strike had been officially declared at end, restrictions against supplying fuel coal to foreign ships were relaxed to permit the departure of hundreds of foreign vessels which had been held in Atlantic and other ports since the shortage of coal became acute. Director General Hines ordered that vessels should be supplied in the following order: (1) Inland and coastwise vessels; (2) American overseas vessels; (3) foreign overseas vessels.

Several days later relaxations on export prohibitions began to become effective although the official control by the Tidewater Coal Exchange was continued until March 31, 1920.

WORK OF CENTRAL COAL COMMITTEE

The handling of the distribution of coal during the strike by the Central Coal Committee fell far short of meeting with general approval in the coal trade. The three principal grievances registered were (1) that delays in payment for fuel taken by the committee were such that the continued operation of the working mines was threatened; (2) that the policy of holding coal on wheels was maintained to such an extent that at the close of the strike the tonnage of unsold coal was so great that the consequent equipment dislocation seriously interfered with normal operations, and (3) that the records of coal taken were loosely kept.

On the first point it may be said that this complaint threatened to be very serious; the resources of the banks in the nonunion mining fields were overtaxed, distributors had millions of funds tied up in coal seized by the committee and efforts to have the financing taken over by the Federal Reserve system were never consummated. The result of the policy criticized in the second cause of general complaint, on the admission of the committee itself, was that on December there were about 225,000 cars under load, chiefly in the West and it was weeks before these were finally disposed of, many of them being thrown back upon the railroads. It was contended that had the committee been more generous in releasing coal during the strike period this tonnage would have been promptly absorbed. As to the third point, it is a matter of record that the committee had under its control thousands of cars the ownership of which it was ignorant of and during the spring and summer of 1920 lists of car numbers were being circulated among producers and distributors with the request that they identify ownership so that payment therefor could be made.

The Central Coal Committee's side of the case was embodied in the report of Mr. Spencer to Director General Hines. Summarizing the results of the committee's work during the strike period, the report said:

"The available coal was so distributed during the period of the strike that the emergency needs of all essential consumers were amply provided for. In the Central and Southwestern regions and the western part of the Northwestern region, where consumers' stocks were very small at the beginning of the strike, difficulties were experienced in getting coal to them, but these difficulties were overcome, and while some nonessential industries in these particular territories were forced to close, some partially and some entirely, during the latter part of the strike period, there was no general suspension of manufacturing and no actual suffering for the want of fuel. In the eastern part of the country, where consumers' stocks were generally larger at the beginning of the strike, the shortage was not felt so soon, and it was not until nearly the close of the strike period that any industries in this section were forced to close down and then only in isolated cases.

"Adequate publicity was given to the arrangements made by the Railroad Administration to provide coal for the needs of the essential consumers, and all of the railroads as well as the various coal committees received and acted on applications promptly."

Previous to the outbreak of the strike, the report said, the railroads had been ordered to accumulate a 30-day supply of coal, either by purchase or by holding commercial coal enroute. On October 31, under the authority conferred on him by the Fuel Administrator, the Director General ordered all railroads under federal control to hold subject to his orders all bituminous and lignite coal then on wheels or thereafter to be loaded. Concurrently with these orders, the report set forth, orders were issued vesting the Central Coal Committee with authority for coal distribution, creating region coal committees representing the Railroad Administration and the Fuel Administration jointly in each railroad region, and reestablishing the priority list for coal distribution which had been fixed by the Fuel Administration during the war.

HAD 21,946,000 TONS FOR DISTRIBUTION

Discussing the coal supply available for distribution during the strike period, the report said:

"There was available for distribution by the Fuel Administration through the agency of the Railroad Administration, including the entire supply of railroad coal both on cars and in storage and current mine production during the period November 1 to December 13, approximately 46,239,550 tons of coal. Of this quantity 24,292,950 tons were loaded on cars at the mines during this period, equivalent to 36 per cent. of the estimated normal loading during the same length of time. The daily loading varied from a minimum of 17 per cent. of normal to a maximum of 45 per cent. It will be noted that by far the larger part of the production was secured from the nonunion fields of the Pocahontas, Allegheny and Southern regions.

"In the total of approximately 21,946,000 tons of coal on hand and available for distribution on November 1, the railroads had 10,946,585 tons of coal which belonged to them, representing approximately 26 days' supply based on their normal consumption."

The report set forth that railroad fuel supply on hand varied from 71 days' supply in the New England region to six days' supply in the Pocahontas region.

"By a prompt survey made in anticipation of the strike," the report continued, "it was found that the number of days' railroad supply on hand in various parts of the country reflected with a considerable degree of accuracy the situation of other consumers in the same territory. The territory in the Northwest, supplied with coal from upper lake docks, was assured of its winter supply, as its dock storage program was complete before the close of lake navigation.

"The total coal in possession of the railroads November 1, including commercial and railroad fuel, represented approximately two weeks' supply for all consumers in the country. The production during the strike period was equivalent only to the requirements of the first five classes on the Fuel Administrator's priority list, leaving no coal available out of current production to supply industries whose operations could not be classed as essential for the immediate needs of this country.

"Throughout the strike there was practically no production in the large producing field known as the Central Competitive District, including western Pennsylvania, Ohio, Indiana and Illinois. Consumers in that part of the country having relied on their proximity to the mines insuring their regular supply, had generally very small reserve stocks, which in many instances were soon exhausted. A similar situation existed in the Middle West, particularly in Iowa, Nebraska, Missouri, Kansas and Oklahoma.

PROBLEM FACED BY CENTRAL COMMITTEE

"The problem presented to the coal committees was therefore to secure the most equitable distribution in all sections of the country of the current production among essential consumers as their stocks were depleted, conserving to the greatest possible extent the reserve supply in possession of the railroads at the beginning of the strike.

"The transportation west of the large quantity of coal produced in the Pocahontas region and the eastern mining districts of the Allegheny region, the greater part of which would normally have been used in the East, involved considerable realignment of transportation, as existing railroad facilities were not designed for a westbound movement of this magnitude. On December 15 the reserve supply in possession of the railroads had been reduced to 10,692,400 tons—only about one week's supply for all consumers in the country."

The report explained in detail the rearrangement of coal movement which met the situation and included detailed tables showing the amount of coal available and the amounts diverted from the normal destinations.

"With reasonably accurate knowledge as to the stocks in each region and the current production," the report said, "it was possible to allocate the coal available so that the emergency requirements of all consumers except manufacturers of nonessentials were provided for."

The report described the movement of large quantities of coal from the Pocahontas and Allegheny regions to Memphis, St. Louis, Chicago, and points farther west, which developed until, by the termination of the strike, approximately 4,000 cars of coal per day, about 40 per cent. of the total output of the Pocahontas and Allegheny regions, were being moved in this way from extreme east to extreme west. Ohio and Indiana were also supplied from the Allegheny and Pocahontas regions by rail, the movement reaching a total of 1,340 cars per day. The large stocks on hand in New England permitted the limitation of shipments to New England to the movement through Pocahontas and Allegheny district tidewater ports.

DIVERSIONS TO NEEDY REGIONS SUMMARIZED

The Southwestern region was supplied with 15,097 cars from the Pocahontas region by way of Memphis and St. Louis during the strike period. A shortage of bunker coal at Gulf ports and the need for railroad fuel there led to the shipment of Pocahontas coal by tidewater from Hampton Roads to Galveston, for which movement the United States Shipping Board furnished tonnage.

The Central Western region requisitioned 21,076 cars of eastern coal during the strike period, and the Northwestern region received during the emergency 22,413 cars of eastern coal. Coal stocks in the upper lake docks, the report said, were confined practically to the normal lake dock consumers. Canada, according to the report, was supplied with 150 cars of eastern coal a day, which was distributed by the Canadian Fuel Administrator.

Discussing the conservation measures adopted and the restrictions placed on coal deliveries, the report said:

"The actual emergency needs of all consumers of bituminous coal were supplied as long ago as the available supply in the various sections of the country permitted. As the reserve supply in the hands of the railroads was reduced and the need in the respective regions increased, the regional committees, working with the state, county, and city officials and with business and other similar organizations in the various communities, placed such restrictions on the furnishing of coal by the railroads to consumers not in the essential classes as was necessary to assure an adequate supply for consumers in the first five classes on the Fuel Administrator's priority list for as long a time as practicable. General restrictions placed in accordance with instructions issued by the Central Coal Committee were universally and cheerfully complied with."

Conservation measures and restrictions mentioned in the report included: Restriction of all coal deliveries to industries whose operation was immediately essential; embargo on exports of bituminous coal, coke, and anthracite coal; limitation of bunker coal deliveries to foreign-flag ships; limitation of coastwise movement of coal; regulations limiting the maximum use of heat, light and power produced from bituminous coal and coke by consumers and the maximum amounts to be furnished by public utilities and central power plants; radical reductions in passenger train service on railroads; limitation of production of beehive coke and diversion of the coal supply of beehive coke ovens to other industries.

"While coal was moved expeditiously to all points," the report said, contradicting the claims of the coal men, "there was nevertheless an unavoidable delay in getting it to the ultimate consumer, which resulted in apprehension on the part of the shipper that notices would be received too late for them to render bills to the diverttee and secure payment within the same period that was ordinarily their trade custom. There is every indication that the operators were promptly paid and those whose financial needs were acute received special consideration, in many cases by the railroads taking coal from their mines as fast as it was produced and paying for it instantly.

"The Railroad Administration," the report continued, "also endeavored in every way that could be thought of to work out a plan by which the shipper might receive payment for his coal when it was shipped, and to extend or help his credit so as to enable him to borrow money on his coal which was held or diverted. Insuperable obstacles were encountered and there was no other course than to expedite by every means at command the bringing of the shipper into communication with the diverttee so that his invoice might be put promptly into the hands of the party who must pay it."

HOW ZONING AFFECTED NORTHWEST

How the zoning system affected the Northwest is indicated by figures recently made public by the United States Geological Survey. These figures cover the actual movement from Illinois, Indiana and the docks to that territory in 1917 and the estimated movement in 1918, and are as follows:

To	From	1917			1918		
		Illinois	Indiana	Lake Dks.	Illinois	Indiana	Lake Dks.
Iowa		4,026,000	247,000	271,560	3,597,000	90,000	225,000
Wisconsin		1,936,000	564,000	4,434,768	2,436,000	617,000	4,870,000
Minnesota		1,801,000	199,000	4,151,132	1,968,000	28,000	4,566,000
North Dakota		43,000	3,000	618,131	8,000	200	654,000
South Dakota		231,000	15,000	477,961	228,000	500	610,000

CONDITIONS IN THE EXPORT TRADE

Foreign developments of the past year have been of a character to promote and encourage the growth of the American export trade in bituminous coal. Shippers of the United States, however, have been prevented from taking the full advantage of the major competitive opportunities presented them, first because of tonnage conditions, and later in the year because of the general bituminous strike. Nevertheless, the strategic position of the United States as an exporter of coal was much improved during 1919. These may be ascribed in part to the possession of a large fleet of vessels flying the Stars and Stripes and in part to the smaller role that reduced working time and governmental restrictions have compelled the United Kingdom, the premier coal exporter of the world, to play during the past year.

The question of how valuable the ships under American registry may prove, however, is still a question of the degree of employment that these bottoms may find in other traffic. The extraordinary charter rates that have persisted as a legacy of the war are still the biggest factor in the trade. The buyer in the foreign countries is naturally interested, not in a price f. o. b. mines, but c. i. f. One explanation of Great Britain's domination of the export coal trade has been the fact that she has been such a great consumer and manufacturer of the raw products of other lands, and that this latter traffic has been so attractive to her ship owners that they have been willing and anxious to make low rates on outbound cargoes of coal in order that vessels might not leave the home ports in ballast.

In past years coal has constituted 75 per cent. by weight of all outward cargoes from Great Britain. It has been described as in part the medium of exchange with which the United Kingdom paid for its South American and Russian wheat and corn, its Baltic timbers, its Chilean nitrates. Grain and meats provided full return loads for some five-eighths of the prewar coal shipments to South America. Ships bringing coal to the Mediterranean and Black Sea ports returned with grain, ores, oil and cotton; mine timbers in the rough have come from France and Portugal, as well as wines and fruits; while Spain has given return cargoes of fruits and ores and the Scandinavian countries timber, linseed and oil cake, grain, flax and paper pulp.

Therefore, the first big problem to be solved by the American merchant marine, if it is to be the same effective agent of the American coal producers that the British shipping has been of the fuel exporters of England and Wales, is to find return cargoes of such profit that the rates made for the carriage of coal may compare favorably with those charged for the movement of coal from British ports. This means venturing upon the sea of international economics for, in the long run, foreign nations will place their business with those countries that offer them the best markets for an exchange of products. It is difficult to see how the coal men here may participate directly in the solution or handling of this problem, yet upon its solution will depend much of the success of the American export coal trade.

The matter of long-term credits, and, during the readjustment period, of special credits, is one that will probably present little trouble to the coal men since the leading financial institutions of the country are now attacking the problems connected with the credit question with unusual interest and vigor. Price, on the other hand, is a factor with which the coal men will have to deal directly. For the present the advantage is with the American producer. Great Britain, with the seven-hour working day and other increased costs, cannot at this time meet the American producers on the basis of f. o. b. quotations. Whether the present great relative disparity between costs in the two areas will continue cannot, of course, be forecast. Finally there remains the question of educating the foreign buyer to the value of American coals and how to get that value out of them; work along such lines must be predicated upon a thorough knowledge of competitive coals and conditions of use in foreign lands.

Looking only to the immediate future, the United States is the source of coal supply towards which the nations of the world are turning in frantic demand. The United Kingdom, with prewar exports of 73,400,000 gross tons, is now working under a permit system which contemplates the exportation of only 21,000,000 gross tons per annum. France has not recovered her stride, and even at maximum prewar production fell some 20,000,000 tons short of mining enough coal to cover her own wants; Belgium has a small exportable surplus, but is also a buyer. Germany, enmeshed in strikes and with a part of her coal fields in the possession of other countries, is in no position to step into the breach for some time to come. This country has the potential capacity and the available men to work. The ability of the United States to meet the immediate necessities of the world is measured by rail transportation facilities and ocean tonnage. The outlook for some time to come, unfortunately, is that the latter will be more adequate than the former.

IMPORTS AND EXPORTS OF COAL

Coal and coke exports from and imports into the United States during the past decade are shown in the following table, which covers figures in gross tons for the fiscal years named:

Year Ending June 30	Exports Anthracite	Exports Bituminous	Imports Bituminous	Exports Coke	Imports Coke
1910.....	2,953,633	10,413,439	1,624,791	872,013	128,197
1911.....	3,146,388	11,839,099	1,761,210	946,474	143,984
1912.....	2,979,102	14,709,847	1,300,242	805,819	65,687
1913.....	4,625,481	16,083,101	1,578,264	900,672	102,715
1914.....	3,959,114	15,704,966	1,358,002	742,476	112,528
1915.....	3,682,188	14,412,995	1,429,608	602,473	88,735
1916.....	3,878,478	18,749,684	1,618,539	976,398	59,753
1917.....	4,635,134	19,533,705	1,282,790	1,170,824	24,782
1918.....	4,842,109	21,052,057	1,391,535	1,337,321	29,097
1919.....	4,285,824	18,152,243	1,008,250	1,053,133	18,050
Total ...	38,387,451	160,645,796	14,353,231	9,407,403	773,528

More detailed figures covering imports in gross tons for the calendar years appear in the next table:

Imports	1915	1916	1917	1918	1919
Bituminous	1,521,237	1,530,212	1,293,262	1,301,229	903,170
From United Kingdom	18,361	5,268	9,300	33,661	1,884
“ Canada	1,253,829	1,399,570	1,250,709	1,250,933	825,123
“ Japan	86,919	93,402	17,513	14,214	6,617
“ Australia	159,241	30,607	13,148	1,369	67,503
“ other countries	2,887	1,365	2,592	1,052	2,043
Coke	88,735*	49,067	22,207	26,936	14,720
Anthracite	2,998	5,693	11,188	33,279	73,945

* Fiscal year.

Exports of bituminous coal during the past four calendar years have been as follows:

	1916	1917	1918	1919
Italy	1,735,072	560,628	9,994	1,632,995
Canada	11,839,447	16,177,571	16,191,364	10,669,890
Panama	427,732	618,962	504,126	72,097
Mexico	196,547	184,345	162,631	101,679
Cuba	1,284,172	1,410,594	1,440,457	971,399
Other West Indies	443,200	402,812	254,501	274,511
Argentina	921,969	317,563	178,899	483,389
Brazil	782,094	685,142	559,099	644,109
Chile .....	.....	.....	300,062	93,618
Uruguay	152,732	60,188	228,959	194,997
Other countries	1,194,381	867,515	125,917	2,830,830
Totals	18,977,346	21,285,320	19,956,009	17,969,514

The totals shown do not include fuel or bunker coal laden on vessels engaged in the foreign trade. This tonnage during the years named was as follows: 7,825,731 tons in 1916; 6,883,176 tons in 1917; 5,532,175 tons in 1918, and 7,342,734 tons in 1919.

The exports of anthracite were as follows: 4,165,652 tons in 1916; 5,363,666 tons in 1917; 4,435,543 tons in 1918, and 4,443,391 tons in 1919. With the exception of 94,804 tons in 1916; 375,426 tons in 1917; 157,610 tons in 1918, and 93,827 tons in 1919, the anthracite exports all moved into Canada.

Coke exports during the calendar years were as follows: In 1912, 912,576 gross tons; in 1913, 881,603 tons; in 1914, 592,487 tons; in 1915, 799,444 tons; in 1916, 1,048,790 tons; in 1917, 1,258,321 tons; in 1918, 1,506,986 tons, and 640,139 gross tons in 1919.

UNITED STATES EXPORTS OF BITUMINOUS COAL

Exports of bituminous coal in gross tons from the United States, by months, during the past six years were:

Month	1914	1915	1916	1917	1918	1919
January	923,760	633,145	942,144	1,071,124	647,681	1,207,634
February	766,309	584,888	1,041,920	997,226	919,999	683,709
March	1,018,612	692,854	1,069,218	1,322,127	1,223,137	554,037
April	772,037	1,112,668	1,247,178	1,389,751	1,554,579	811,128
May	1,083,813	1,404,277	1,980,100	1,830,389	2,119,700	1,429,612
June	1,185,566	1,933,410	2,065,509	2,386,006	2,205,711	2,179,201
July	1,339,987	2,226,493	2,032,018	1,571,963	2,244,530	2,027,206
August	1,955,176	2,000,848	2,384,583	3,059,194	2,222,187	2,356,046
September	1,857,520	1,832,977	2,003,353	1,812,412	2,170,425	2,721,897
October	1,351,977	1,782,450	1,644,464	2,592,876	1,888,801	2,934,686
November	850,947	1,396,337	1,329,904	1,718,860	1,616,914	724,650
December	696,546	1,161,936	1,236,955	1,714,999	1,714,999	341,064
Total	13,801,850	16,565,043	18,490,603	21,437,027	20,528,663	18,170,870

UNITED STATES EXPORTS OF ANTHRACITE COAL

Exports of anthracite coal in gross tons from the United States, mostly to Canada, by months, during the past six years were:

Month	1914	1915	1916	1917	1918	1919
January	197,415	190,299	274,986	295,396	239,549	368,749
February	206,813	178,240	293,541	254,585	227,319	221,018
March	163,431	127,195	309,955	364,587	397,358	117,805
April	396,260	453,527	218,982	586,367	340,783	285,190
May	475,483	422,694	450,785	429,137	425,110	398,890
June	433,245	352,636	514,434	604,777	378,753	474,315
July	388,977	270,651	390,078	390,619	395,537	487,653
August	455,305	307,137	394,244	678,797	411,804	505,219
September	395,088	290,350	353,507	448,124	442,714	489,703
October	344,434	361,264	343,181	478,317	456,029	433,742
November	239,286	290,699	322,580	293,981	430,369	320,719
December	184,467	295,694	299,379	541,663	292,014	345,402
Total	3,830,244	3,540,406	4,165,652	5,363,666	4,435,543	4,448,405

COKE EXPORTS FROM THE UNITED STATES

Exports of coke from the United States during 1917, 1918 and 1919 were:

	1917	1918	1919		1917	1918	1919
January	83,673	84,741	67,526	July	52,665	145,490	37,703
February	79,099	83,758	48,806	August	107,978	131,751	61,714
March	130,079	141,213	33,749	September	88,071	132,553	63,771
April	79,759	141,003	44,883	October	114,013	118,796	81,962
May	134,091	146,740	33,299	November	71,158	146,647	66,873
June	152,948	141,194	56,533	December	164,787	93,100	43,320
Total				Total	1,258,321	1,506,986	640,139

IMPORTS OF BITUMINOUS COAL

Imports of bituminous coal in gross tons into the United States, by months, during the past six years were:

Month	1914	1915	1916	1917	1918	1919
January	112,303	134,075	156,566	96,952	105,569	72,784
February	117,173	118,922	158,441	115,607	101,450	55,834
March	121,826	124,479	147,477	115,578	128,248	76,528
April	166,181	137,721	147,792	96,139	91,334	60,550
May	59,690	89,140	109,041	71,638	103,186	81,511
June	91,591	118,719	101,041	77,022	141,422	31,294
July	89,280	111,176	122,273	115,812	109,306	43,542
August	103,469	116,295	125,624	110,333	111,350	43,570
September	128,771	126,282	125,073	111,196	113,969	77,031
October	98,324	133,096	106,706	130,680	134,779	109,852
November	118,673	135,319	118,104	147,291	90,878	131,334
December	168,035	175,023	112,074	105,014	69,738	119,340
Total	1,375,316	1,521,237	1,530,212	1,293,262	1,301,229	903,170

AVERAGE MONTHLY PRICES OF COAL EXPORTED

Average prices of coal, both grades, exported during the year 1919 and three years previous are given below. These are based on the value at the time of exportation at the ports from which shipped.

Month	Anthracite				Bituminous			
	1916	1917	1918	1919	1916	1917	1918	1919
January	\$5.23	\$5.76	\$6.74	\$7.45	\$2.54	\$3.36	\$3.80	\$4.68
February	5.27	5.65	6.67	7.22	2.40	3.36	4.08	4.38
March	5.28	5.60	6.51	7.38	2.30	3.56	4.02	5.00
April	5.24	5.83	6.58	8.17	2.24	3.14	3.98	4.80
May	5.12	5.40	6.37	8.15	2.28	3.47	3.66	4.20
June	5.35	5.29	6.33	8.44	2.32	3.54	3.87	4.38
July	5.42	5.60	6.40	8.13	2.33	3.82	4.00	4.30
August	5.55	4.85	6.35	8.48	2.33	3.99	3.93	4.62
September	5.47	5.80	6.58	8.35	2.32	3.85	4.02	4.90
October	5.44	5.92	6.58	8.48	2.42	3.92	4.15	5.03
November	5.64	6.20	6.82	8.80	2.72	3.98	4.00	5.13
December	5.70	5.94	7.38	8.75	3.00	3.56	4.18	4.83

AVERAGE PRICE OF BITUMINOUS COAL IMPORTS

The average monthly price of bituminous coal imported into the United States during 1918 and 1919 were as follows:

	Price			Price			Price	
	1918	1919		1918	1919		1918	1919
January	\$4.38	\$5.34	May	\$4.95	\$5.31	September	\$5.19	\$5.63
February	5.28	5.94	June	4.85	6.48	October	5.69	5.19
March	4.89	5.33	July	5.10	5.74	November	5.69	5.06
April	5.12	5.69	August	5.41	5.81	December	5.43	5.62

EXPORTS OF BITUMINOUS COAL

Exports of bituminous coal from the United States for the seven fiscal years 1912 to 1918, both inclusive, and for the calendar years of 1918 and 1919 are shown in the tables following. Prior to 1918 these statistics were published in cumulative form upon a fiscal year basis. In order to assist in making the two series comparable, there is also included a statement of exports for the six

months ended December 31, 1918. These figures, based upon reports by the Bureau of Foreign and Domestic Commerce of the Department of Commerce give a survey in miniature of American coal exports before the war, of the rapid changes before the United States entered into the conflict and, in the final statistics, some of the readjustments that are taking place at the present time. Detailed figures, covering exports by months to some of the more important destinations shown below, appear elsewhere in this section of THE COAL TRADE.

Exported to—	Year Ended June 30—			1915
	1912	1913	1914	
Europe:				
Austria-Hungary	26,226	64,754	39,952	.....
Azores and Madeira Islands ..	16,433	.....	5	5,728
France	43,222	16,140	47,322	50,620
Germany	819	6,730	5,120	.....
Gibraltar	5,308	5,320	11,280	32,578
Greece .....	.....	.....	.....	101,783
Italy	276,467	332,204	776,422	1,628,279
Malta, Gozzo, etc.	5,623	.....	.....	.....
Netherlands	4,000	245	202	10,868
Norway .....	.....	.....	.....	64,247
Portugal .....	.....	.....	50	17,637
Russia in Europe .....	.....	.....	.....	1,200
Spain	16,027	50,260	42,875	100,547
Sweden .....	.....	.....	.....	46,415
United Kingdom	11,280	.....	20	2,261
North and Central America:				
Bermuda	10,099	8,808	13,566	20,145
British Honduras	1,243	826	1,743	586
Canada	10,671,982	11,981,443	11,472,397	8,245,103
Costa Rica	37,552	39,526	45,386	29,141
Greenland	554	.....	.....	.....
Guatemala	16,205	17,646	15,858	15,543
Honduras	4,688	6,846	13,759	18,577
Mexico	344,712	443,884	296,392	391,611
Newfoundland and Labrador	9,783	26,683	20,746	4,016
Nicaragua	3,020	1,042	1,617	1,271
Panama	511,802	483,884	362,427	343,372
Salvador	210	45	.....	.....
West Indies:				
Barbadoes	79,455	70,739	60,608	66,250
Jamaica	70,953	56,132	70,765	53,091
Trinidad and Tobago	121,432	85,866	92,925	83,315
Other British West Indies	150,072	124,819	112,488	61,156
Cuba	1,121,580	1,273,945	1,129,594	1,065,206
Danish West Indies	140,479	105,093	90,105	37,786
Dutch West Indies	35,028	62,805	43,557	54,716
French West Indies	72,062	70,815	79,404	71,502
Haiti	4,065	8,488	2,228	1,897
Santo Domingo	8,839	8,366	11,895	12,344
South America:				
Argentina	156,722	38,834	139,409	563,882
Bolivia .....	.....	.....	.....	1,007
Brazil	307,125	234,368	230,082	527,264
Chile	29,751	112,067	88,876	57,781
Columbia	3,427	3,958	3,684	2,601
Ecuador	17,652	18,305	22,571	.....
British Guiana	15,687	11,200	16,054	25,406
Dutch Guiana	6,452	5,485	5,325	2,712
French Guiana	299	191	280	.....
Peru	39	9,209	96	4,430
Uruguay	40,265	4,400	64,452	103,639
Venezuela	2,671	3,351	5,733	8,553
Asia:				
British India .....	.....	.....	.....	3,103
Dutch East Indies .....	.....	.....	.....	8,014
Japan	6,605	.....	.....	5,559
Russia in Asia	7	.....	.....	.....
Oceania:				
Philippine Islands	5	53,353	45,987	36,837

Exported to—	Year Ended June 30			
	1912	1913	1914	1915
Africa:				
Belgian Congo .....	.....	.....	.....	2,742
British West Africa	7,520	.....	.....	10,950
British South Africa .....	.....	6,201	.....	3,742
Canary Islands	49,512	.....	.....	20,552
Egypt	121,275	96,627	73,785	139,606
French Africa	102,498	132,548	142,144	47,889
German Africa	1,493	.....	3,712	.....
Portuguese Africa	14,802	.....	.....	5,418
Liberia .....	.....	.....	.....	6,045
Morocco .....	.....	.....	.....	2,348
Tripoli	5,100	.....	.....	.....
Total	14,709,847	16,083,101	15,704,966	14,412,995
Europe:	Year Ended June 30			
	1916	1917	1918	1919*
Azores and Madeira Islands	9,545	11,631	815	.....
Denmark	2,677	.....	10	.....
France	180,039	121,123	20,116	1,128
Gibraltar .....	.....	.....	800	.....
Greece	87,778	18,356	2,894	.....
Iceland and Faroe Islands	855	3,474	.....	.....
Italy	2,797,506	1,099,508	201,220	.....
Netherlands	27,328	.....	.....	16,512
Norway	45,235	67,685	.....	.....
Portugal	32,438	54,730	39,530	.....
Russia in Europe .....	.....	5,693	.....	.....
Serbia, Montenegro and Albania ..	143	.....	.....	.....
Spain	150,758	209,712	44,440	.....
Sweden	246,580	33,412	.....	.....
United Kingdom	4,449	.....	.....	.....
North and Central America:				
Bermuda	33,350	36,505	31,118	4,002
British Honduras	378	1,320	342	69
Canada	10,493,111	13,085,016	16,693,062	9,609,522
Costa Rica	25,817	17,639	1,565	.....
Greenland	801	700	703	.....
Guatemala	20,396	1,362	470	226
Honduras	15,069	16,434	7,307	2,992
Mexico	205,809	191,740	168,464	85,960
Newfoundland and Labrador	7,861	9,811	1,523	1,451
Nicaragua	1,755	2,470	3,193	1,173
Panama	473,183	520,760	611,413	238,586
Salvador	6	2	.....	4
West Indies:				
Barbadoes	103,481	67,671	61,745	34,513
Jamaica	55,865	77,743	34,267	10,639
Trinidad and Tobago	74,815	32,252	28,989	4,715
Other British West Indies	123,447	87,571	42,015	11,223
Cuba	1,243,394	1,445,722	1,494,987	587,966
Danish West Indies†	20,617	40,811	23,183	9,075
Dominican Republic .....	.....	.....	.....	15,739
Dutch West Indies	52,809	45,046	18,743	11,355
French West Indies	93,644	85,315	64,814	9,019
Haiti	4	238	2,006	884
Santo Domingo	17,336	17,219	24,257	.....
South America:				
Argentina	779,342	706,776	247,613	51,434
Brazil	678,766	756,592	625,374	268,750
Chile	151,528	329,832	324,278	134,333
Colombia	5,221	8,746	9,186	915
Ecuador	18,741	19,253	8,645	.....
British Guiana	18,062	5,166	3,902	1,965
Dutch Guiana	5,909	3,064	1,703	.....
French Guiana	20,964	4,803	.....	10
Peru	154,334	39,899	25,376	3,585
Uruguay	6,757	101,959	109,178	161,464
Venezuela	3,358	1,896	271
Asia:				
Dutch East Indies	16,152	7,929
Russia in Asia	1

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	Year Ended June 30			
	1916	1917	1918	1919*
Oceania:				
Australia		274		
Other British Oceania		2	100	3
Philippine Islands		103	34	
Africa:				
British East Africa	1,113			
British West Africa			2,084	
British South Africa		1,930		
Canary Islands	10,538	7,415		6,531
Egypt	102,591	63,678		
French Africa	112,405	141,419	15,014	
Portuguese Africa	5,419	4,720	7,827	5,908
Morocco	4,110	1,023		
Total	18,784,684	19,628,091	21,051,979	11,286,922

*Covers exports from July 1 to December 31, 1918, inclusive, only.

†Now Virgin Islands.

Exported to—			Exported to—		
Europe:			West Indies:		
	Year Ended Dec. 81			Year Ended Dec. 81	
	1918	1919		1918	1919
Austria-Hungary		212	Dominican Republic ...	30,155	13,693
Azores and Madeira Is.		32,536	Dutch West Indies ...	16,747	24,694
Denmark		88,903	French West Indies ...	37,456	23,934
France	7,230	532,443	Haiti	903	
Germany		8,540	Virgin Islands	21,579	14,346
Belgium		200	South America:		
Gibraltar	800	14,388	Argentina	178,899	483,889
Greece	2,894	48,110	Brazil	559,099	642,109
Italy	9,994	1,632,994	Chile	300,062	123,860
Netherlands	16,512	722,191	Colombia	979	11,835
Norway		159,842	Ecuador	2,141	2,948
Portugal	4,840	35,178	Falkland Islands	3,906	15,208
Spain		18,623	British Guiana	4,762	3,846
Sweden		252,891	Dutch Guiana	802	1,001
Switzerland		528,575	French Guiana	10	
Turkey in Europe		4,005	Peru	21,651	45,819
United Kingdom	1,090	8,039	Uruguay	228,959	194,997
No. and Cent. Amer.:			Venezuela	2,158	496
Bermuda	20,981	19,496	Asia:		
Brit. Honduras	59	601	Dutch East Indies ...		13,221
Canada	16,191,364	10,670,490	Russia in Asia		3
Costa Rica	1,565	1,717	Oceania:		
Greenland		1,217	New Zealand		50,034
Guatemala	221	3,893	Other British Oceania..	3	5
Honduras	7,128	8,367	Philippine Islands	34	
Mexico	162,631	101,585	Africa:		
Newfound. and Lab.	1,941	8,418	British East Africa ...		2,068
Nicaragua	2,511	2,026	British South Africa ...		16,100
Panama	504,129	72,097	British West Africa ...	2,084	4,159
Salvador	4	2,243	Canary Islands	6,531	1,819
West Indies:			Egypt		37,543
Barbadoes	72,536	103,424	French Africa	2,149	52,001
Jamaica	22,679	33,058	Italian Africa		5,166
Trinidad and Tobago ...	22,247	41,819	Portuguese Africa	5,908	55,430
Other Brit. W. Indies ..	30,199	28,088	Total	19,956,009	17,996,663
Cuba	1,440,467	971,399			

TIDEWATER SHIPMENTS OF COAL

Tidewater shipments of bituminous coal from North Atlantic ports and Charleston, S. C., as reported by the Tidewater Coal Exchange, were as follows during 1918 and 1919:

Harbor	Inside capes and bunker	N. E.	Foreign	Bunker	Other(a)	Total
New York:						
1918		3,946,368	28,222	2,573,443	10,542,700	17,090,736
1919		2,510,497	10,348	2,669,030	9,054,362	14,234,237
Philadelphia:						
1918	2,006,025	548,014	90,570	420,057	56,230	3,120,956
1919	2,069,043	492,405	1,140,077	677,498	31,882	4,410,905

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	Inside Capes and Bunker	N. E.	Foreign	Bunker	Other(a)	Total
Baltimore:						
1918	1,108,532	1,991,184	112,376	387,927	41,446	3,641,464
1919	776,553	129,311	1,771,562	610,335	180,510	3,467,270
Hampton Roads:						
1918	1,358,591	8,756,011	3,499,579	2,648,634	2,713,861	18,976,676
1919	584,912	5,233,612	5,183,712	2,837,007	789,839	14,629,132
Charleston:						
1918	2,584	6,552	10,003	32,938	26,613	78,690
1919	8,346	19,567	186,715	90,049	15,606	320,273
Total:						
1918	4,475,732	15,248,129	3,740,750	6,062,999	13,880,910	42,908,522
1919	3,437,853	8,386,382	8,292,414	6,873,919	10,072,248	37,061,817

(a) Consists, for New York, of water shipments to New York and New Jersey points located around New York Harbor, plus a small tonnage for Army and Navy; for other ports consists largely of coal for Army and Navy.

All figures are in net tons.

EXPORTS FROM NORTH ATLANTIC PORTS

The export trade of the United States in the calendar year 1918, as reported by the Bureau of Foreign and Domestic Commerce, amounted to 22,351,000 net tons of bituminous and 4,968,000 net tons of anthracite. Ninety-nine per cent. of the anthracite and over 80 per cent. of the bituminous coal went to Canada, by rail or lake. In 1919 the exports of anthracite were 4,968,000 net tons, again almost exclusively shipments to Canada. The bituminous exports for that year were 20,126,000 net tons, of which 12,064,000 tons went to Canada and Mexico, and the balance were over-sea shipments to Europe and other countries, largely from North Atlantic ports.

Bituminous coal dumped at North Atlantic ports for export by months during 1918 and 1919 was as follows:

Month	New York Tons	Philadelphia Tons	Baltimore Tons	Hampton Roads Tons	Charleston Tons	Total Tons
1918						
January .....	....	24,000	4,000	190,000	....	218,000
February	1,000	7,000	7,000	280,000	....	295,000
March	2,000	15,000	6,000	372,000	1,000	396,000
April	1,000	17,000	10,000	340,000	....	368,000
May	1,000	3,000	7,000	356,000	....	367,000
June	4,000	4,000	4,000	346,000	....	358,000
July	12,000	4,000	15,000	240,000	....	271,000
August	2,000	....	....	237,000	....	239,000
September	4,000	5,000	5,000	428,000	1,000	443,000
October	2,000	....	8,000	223,000	4,000	237,000
November .....	....	3,000	20,000	204,000	4,000	231,000
December .....	....	9,000	26,000	282,000	....	317,000
Total, 1918 ..	29,000	91,000	112,000	3,498,000	10,000	3,740,000
1919						
January	1,000	26,000	36,000	392,000	1,000	456,000
February .....	....	22,000	33,000	273,000	6,000	334,000
March .....	....	12,000	30,000	217,000	7,000	266,000
April	1,000	9,000	86,000	280,000	3,000	379,000
May	1,000	33,000	99,000	328,000	15,000	476,000
June	79,000	192,000	471,000	13,000	755,000
July	2,000	134,000	197,000	391,000	15,000	739,000

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Month 1919	New York Tons	Philadelphia Tons	Baltimore Tons	Hampton Roads Tons	Charleston Tons	Total Tons
August		185,000	289,000	621,000	34,000	1,129,000
September	1,000	271,000	362,000	860,000	32,000	1,526,000
October	3,000	327,000	433,000	1,056,000	.....	1,819,000
November	2,000	42,000	11,000	135,000	40,000	230,000
December .....	.....	.....	2,000	158,000	22,000	182,000
Total, 1919 ..	11,000	1,140,000	1,770,000	5,182,000	188,000	8,291,000

All figures given are in net tons.

BUNKER COAL SUPPLIED

Tonnage supplied to vessels engaged in foreign trade during the past three years was as follows:

	1917	1918	1919		1917	1918	1919
January	629,682	426,082	487,998	August	597,136	530,293	767,905
February	539,866	415,403	417,841	September	546,123	503,608	783,807
March	613,253	432,474	457,413	October	547,646	522,204	724,024
April	581,303	383,912	682,592	November	534,171	425,447	613,851
May	629,010	425,796	670,001	December	428,844	443,385	505,478
June	627,962	468,779	672,669	Total	6,883,176	5,532,175	7,342,734
July	608,450	548,792	659,155				

COAL AND COKE EXPORTS BY CUSTOMS DISTRICTS

Coal and coke exports by customs districts during 1918 and 1919 are shown in the following tabulation:

	Anthracite		Bituminous		Coke	
	1918	1919	1918	1919	1918	1919
Maryland	400	2,440	107,157	1,717,342	82,311	67,075
Maine & N. H.	9,227	1,312	71	11,879	1,500	1,029
Massachusetts ..	183	2,596	1,489	2,489	.....	.....
New York	31,447	70,984	48,717	29,277	12,249	14,411
Philadelphia ...	37,228	59,359	50,147	1,014,235	3,911	14,837
South Carolina ..	.....	1,458	14,477	156,471	.....	.....
Virginia	254	6,675	3,231,851	4,179,900	7,501	6,807
Mobile .....	.....	.....	7,007	6,224	27	1,259
New Orleans ..	68	1,810	65,444	15,818	1,350	724
Arizona	246	49	88,029	38,844	173,572	120,371
El Paso	1,082	882	49,743	41,555	37,288	36,131
San Francisco ..	3	.....	5	111	132	250
Southern Cal. ..	14	151	91	247	.....	.....
Washington ...	105	350	32,915	4,230	14,097	1,431
Florida .....	.....	1,317	38,214	40,566	4,827	.....
Sabine	46	1	.....	17	19	84
Montana .....	.....	.....	42	.....	.....	.....
Galveston .....	.....	.....	5,007	.....	.....	.....
Georgia	1,650	2	22,893	32,947	.....	.....
San Antonio ..	3,309	2,812	13,127	13,477	109,187	20,707
Buffalo	2,331,662	2,341,091	3,591,277	2,193,852	517,296	191,842
Dakota	1,654	4,742	20,365	34,064	2,353	4,891
Dul. & Sup. ...	335	16,634	26,417	43,637	551	664
Michigan	11,574	530	1,837,875	1,013,014	335,744	92,776
Ohio	34,925	56,264	7,261,663	5,260,883	159,164	21,135

	Anthracite		Bituminous		Coke	
	1918	1919	1918	1919	1918	1919
Rochester	608,121	514,817	1,076,474	488,156	5,613	3,479
St. Lawrence	1,291,585	1,335,903	2,239,737	1,574,782	33,745	37,964
Vermont	20,424	21,086	125,717	40,798	4,544	1,252
Oregon		1		2,162		
Total to Canada	4,379,177	4,349,164	16,192,468	10,669,890	1,071,430	356,337
Totals	4,435,543	4,443,391	19,956,009	17,958,514	1,506,986	640,139

Totals include small tonnage from Porto Rico, Alaska and Hawaii.

IMPORT DUTIES OF DIFFERENT COUNTRIES

None of the South American countries charges import duties on coal except Uruguay. Uruguay assesses a duty of .60 peso per 1,000 kilos (gross weight). There is also a special tax of .05 pesos per ton upon all coal cleared through the port of Montevideo. The vessels carrying the coal, operating in the port of Montevideo, pay a special tax of .15 peso per ton of the cargo carried. The coal is exempt from any other customs duty or supplementary tax. While coal is imported free of duty in Brazil, heavy clearance charges are imposed.

Most of the European countries admit coal free of duty. France, however, taxes the importer at the rate of 0.12 francs per 100 kilos; Portugal, 37.2 cents per ton on anthracite and 43.2 cents per ton on coke and briquets; Turkey, two piaseters per 100 kilos; Denmark charges 0.03 crown per 100 kilos. In normal times, Spain has a duty of 3.50 pesetas per 1,000 kilos and a transport tax of 0.50 pesetas per metric ton, but these were annulled in 1915, when the coal shortage following the outbreak of the war began to be felt severely in that country. Accurate information is lacking on the Russian situation. In peace times, the old Russian empire imposed a tax of 0.066 rubles per pood on coal imported by the Black Sea or the Sea of Azov, and of 0.0165 rubles on imports via the Baltic Sea. Calculating a pood at 36 pounds and a ruble at 51.5 cents would make a tax of \$1.88 per net ton in the former instance; one-fourth as much in the latter.

Canada admits American anthracite free, and on bituminous run-of-mine and screened coal charges a general duty of 53 cents per ton, and until the spring of 1919 a special tax of 7½ per cent. ad valorem. Slack is taxed 14 cents per ton, general. Anything that passes through a three-quarter inch screen is classified as slack by the Canadian custom officials. Coke is taxed 7½ per cent. ad valorem.

OCEAN FREIGHT RATES FROM UNITED STATES

Until September, 1919, coal charter rates from United States ports were subject to the jurisdiction of the United States Shipping Board. In that month it relinquished practical control of rates over vessels not owned or operated by it and in March, 1920, it ceased to exercise supervision over rates made by its own vessels.

Shipments to European destination from North Atlantic ports during the spring of 1919 were made under U. S. S. B. European Coal Tariff 22, effective April 15, 1919. Rates per gross ton, and guaranteed daily discharges named were as follows:

To	Per ton	Guaranteed
		daily discharge
Bordeaux/Havre	\$22.50	700
Antwerp/Rotterdam	22.50	1,000
Gothenburg (Sweden)	26.50	1,000
Copenhagen/Ronne (Denmark)	27.00	1,000
Landskrona/Malmö (Sweden)	27.00	1,000
Oxelosund (Sweden)	28.00	1,000

To	Per ton	Guaranteed daily discharge Tons
Stockholm	28.00	1,500
Marseilles	26.00	1,000
Genoa	26.50	1,000
Naples	26.00	1,000
Trieste/Fiume/Venice	31.00	800

Conditions:—Discharge as above indicated, with time counting 24 hours after arrival of vessel, whether in berth or not, Sundays and holidays only excepted. If discharge is not completed within the time specified demurrage to be paid at the rate of one dollar per net registered ton per running day, payable day by day.

By supplement 1, effective June 6, the rates named were also made applicable from Charleston, S. C., and that port enjoyed the benefit of all subsequent rates named from North Atlantic ports.

Provision for coke shipments was made in the next tariff, European Coal Tariff 22-A, effective June 23. This tariff enlarged the number of ports to which rates were shown and provided as follows:

To	Coal Per ton of 2240 lbs.	Guaranteed daily discharge tons	Coke Per ton of 2240 lbs.	Guaranteed daily discharge tons
Bordeaux/Havre/St. Nazaire	\$22.50	700	\$33.75	600
Cherbourg	22.50	700	33.75	600
Rouen	23.00	1,000	34.50	600
Antwerp/Rotterdam/Terneuzen	22.50	1,000	33.75	600
Gothenburg	26.50	800	39.75	600
Landskrona/Malmö	27.00	800	40.50	600
Oxelösund/Stockholm	28.00	800	42.00	600
Helsingfors/Sundsvall	30.00	800	45.00	600
Bergen/Christiania/Copenhagen	27.00	1,000	40.50	600
Korsör/Ronne	27.00	1,000	40.50	600
Trondhjem	28.00	1,000	42.00	600
Lisbon	22.50	1,000	33.75	600
Cádiz	23.50	1,000	35.25	600
Bilbao/Cartagena/Barcelona	26.00	1,000	39.00	600
Cette/Marseilles/Naples	26.00	1,000	39.00	600
Civitavecchia	26.00	1,000	39.00	600
Nice/Genoa/Leghorn/Spezia/Savona	26.50	1,000	39.75	600
Piræus	28.50	1,000	42.75	600
Trieste/Fiume/Venice	31.00	800	46.50	600
Salonica	31.00	1,000	46.50	600
Barī	30.00	1,000	45.00	600
Constantinople/Constanza/Smyrna	31.00	1,000	45.00	600
Algiers/Oran	26.00	800	39.00	600
Tunis	26.50	1,000	39.75	600
Sfax	27.50	1,000	41.25	600
Alexandria/Port Said	31.00	1,000	46.50	600

Conditions:—Discharge as above indicated, with time counting 24 hours after arrival of vessel, whether in berth or not, Sundays and holidays only excepted. If discharge is not completed within the time specified demurrage to be paid at the rate of \$1.00 per net registered ton per running day, payable day by day.

Coke:—Subject condition that vessel to have option of carrying not over 25% on deck at owner's risk.

This tariff was cancelled by 22-B, effective August 1, 1919, which named the following rates:

To	Coal Per ton of 2240 lbs.	Guaranteed daily discharge tons	Coke Per ton of 2240 lbs.	Guaranteed daily discharge tons
Bordeaux/Havre/St. Nazaire	\$22.50	700	\$33.75	600
Cherbourg	22.50	700	33.75	600
Rouen	23.00	1,000	34.50	600
Antwerp/Rotterdam/Terneuzen	22.50	1,000	33.75	600
Gothenburg	24.00	1,000	36.00	600
Landskrona/Malmö	25.00	800	37.50	600
Oxelösund	24.00	1,500	36.00	600
Stockholm	26.00	800	39.00	600
Helsingfors/Sundsvall	23.00	800	42.00	600

To	Coal Per ton of 2240 lbs.	Guaranteed daily discharge tons	Coke Per ton of 2240 lbs.	Guaranteed daily discharge tons
Bergen/Christiania/Copenhagen	25.00	1,000	37.50	600
Korsor/Ronne	26.00	1,000	39.00	600
Trondhjem	27.00	1,000	40.50	600
Lisbon	22.50	1,000	33.75	600
Bilbao/Cadiz	23.50	1,000	35.25	600
Barcelona/Cartagena	26.00	1,000	39.00	600
Cette/Marseilles/Naples	26.00	1,000	39.00	600
Civitavecchia	26.00	1,000	39.00	600
Nice/Genoa/Leghorn/Spezia/Savona	26.50	1,000	39.75	600
Piraeus	28.50	1,000	42.75	600
Venice/Trieste/Fiume	31.00	800	46.50	600
Salonica	31.00	1,000	46.50	600
Bari	30.00	1,000	45.00	600
Constantinople/Constanza/Smyrna	31.00	1,000	46.50	600
Algiers/Oran	26.00	800	39.00	600
Tunis	26.50	1,000	39.75	600
Sfax	27.50	1,000	41.25	600
Alexandria/Port Said	31.00	1,000	46.50	600

Conditions.—Discharge as above indicated, with time counting 24 hours after arrival of vessel, whether in berth or not, Sundays and holidays only excepted. If discharge is not completed within the time specified demurrage to be paid at the rate of \$1.00 per net registered ton per running day, payable day by day.

Coke.—Subject condition that vessel to have option of carrying not over 25% on deck at owner's risk.

European Coal and Coke Tariff 22-B was in turn canceled by 22-C, effective August 20, 1919, naming the following rates:

To	Coal Per ton of 2240 lbs.	Guaranteed tons daily discharge	Steel	Wood	Coke Per ton of 2240 lbs.	Guaranteed tons daily discharge
Bordeaux/Havre/St. Nazaire	\$22.50	700	525		\$33.75	600
Cherbourg/Dunkirk	22.50	700	525		33.75	600
Rouen	23.00	1,000	750		34.50	600
Antwerp/Rotterdam/Terneuzen	22.50	1,000	750		33.75	600
Gothenburg	24.00	1,000	750		36.00	600
Landskrona/Malmo	25.00	800	600		37.50	600
Oxelosund	24.00	1,500	1,125		36.00	600
Stockholm	26.00	800	600		39.00	600
Helsingfors/Sundsvall	28.00	800	600		42.00	600
Bergen/Christiania/Copenhagen	25.00	1,000	750		37.50	600
Korsor/Ronne	26.00	1,000	750		39.00	600
Trondhjem	27.00	1,000	750		40.50	600
Lisbon	22.50	1,000	750		33.75	600
Bilbao/Cadiz	23.50	1,000	750		35.25	600
Barcelona/Cartagena	26.00	1,000	750		39.00	600
Cette/Marseilles/Naples	26.00	1,000	750		39.00	600
Civitavecchia	26.00	1,000	750		39.00	600
Nice/Genoa/Leghorn/Spezia/Savona	26.50	1,000	750		39.75	600
Piraeus	28.50	1,000	750		42.75	600
Venice/Trieste/Fiume	31.00	800	600		46.50	600
Salonica	31.00	1,000	750		46.50	600
Bari	30.00	1,000	750		45.00	600
Constantinople/Constanza/Smyrna	31.00	1,000	750		46.50	600
Algiers/Oran	26.00	800	600		39.00	600
Tunis	26.50	1,000	750		39.75	600
Sfax	27.50	1,000	750		41.25	600
Alexandria/Port Said	31.00	1,000	750		46.50	600

Conditions.—Discharge as above indicated, with time counting 24 hours after arrival, whether in berth or not, Sundays and holidays only excepted. If discharge is not completed within the time specified, demurrage to be paid at the rate of \$1.00 (50c wooden vessels) per net registered ton per running day, payable day by day.

Coke.—Subject to condition that vessel have option of carrying not over 25% on deck at owner's risk.

Supplement No. 1 to 22-C, effective August 29, made the following changes:

To	Coal Per ton of 2240 lbs.	Guaranteed tons daily discharge		Coke Per ton of 2240 lbs.	Guaranteed tons daily discharge
		Steel	Wood		
Brest/Dieppe/Bayonne	\$22.50	700	525	\$33.75	600
Nantes/St. Nazaire	22.50	700	525	33.75	600
Trelleborg	25.00	800	600	37.50	800
Gefle	23.00	800	600	42.00	800
Amsterdam	23.00	1,000	750	34.50	600
Danzig	25.00	1,000	750	37.50	800
Memel	27.00	600	450	40.50	600
Huelva/Porto Ferreiro/Vigo	23.50	700	525	35.25	600
Alicante/Malaga/Valencia	26.00	1,000	750	39.00	600
Taranto	28.50	1,000	750	42.75	600
Spalato	31.00	1,000	750	46.50	600
Palermo	26.50	700	525	39.75	600
Messina	29.00	1,000	750	43.50	600
Catania	29.00	600	450	43.50	600
Valheta	27.50	1,000	750	41.25	600
Burgas/Galatz/Varna	31.00	1,000	750	46.50	600

Conditions.—Discharge as above indicated, with time counting 24 hours after arrival, whether in berth or not, Sundays and holidays only excepted. If discharge is not completed within the time specified, demurrage to be paid at the rate of \$1.00 (50c wooden vessels) per net registered ton per running day, payable day by day.

Coke.—Subject to condition that vessel have option of carrying not over 25% on deck at owner's risk.

RATES TO SOUTH AMERICAN PORTS

Between July 15, 1919 and January 8, 1920, rates to South American ports from United States Atlantic and Gulf Ports were carried in South American Coal Tariff Nq. 23, which provided as follows:

EAST COAST	Coal Per ton of 2240 lbs.	Guaranteed daily discharge tons
Bahia, Brazil	\$16.00	500
Bahia Blanca, Argentine	17.50	1,000
Buenos Aires, Argentine	16.00	1,000
Buenos Aires, Argentine	17.00	750
La Plata, Argentine	16.00	1,000
La Plata, Argentine	17.00	750
Montevideo, Uruguay	16.00	1,000
Montevideo, Uruguay	17.00	750
Pernambuco, Brazil	16.00	500
Rio de Janeiro, Brazil	17.00	1,000
Rio Grande do Sul, Brazil	19.50	500
Rosario, Argentine	19.00	750
Santos, Brazil	17.00	1,000
Santos, Brazil	18.50	600
WEST COAST		
Guayaquil, Ecuador to Talcahuana, Chile, inclusive	14.00	750
Punta Arenas, Chile	32.50	500
Coke		

WEST COAST

Guayaquil, Ecuador to Talcahuana, Chile, inclusive.... 21.00 525

Conditions.—Coal: Loading 1,500 tons daily; discharge as above indicated, with time counting 24 hours after arrival of vessel, whether in berth or not, Sundays and holidays only excepted. If loading and discharge is not completed within the time specified, demurrage to be paid at the rate of \$1.00 per net registered ton per running day, payable day by day.

Coke.—Loading 800 tons daily; discharge as above indicated, with time counted and demurrage payable under same conditions as apply on coal.

Tariff 23-A, effective January 9, 1920, which canceled Tariff 23, provided the following rates:

	Coal Per ton of 2240 lbs.	Guaranteed daily discharge tons
EAST COAST		
Bahia, Brazil	\$16.00	500
Bahia Blanca, Argentine	17.50	1,000
Buenos Aires, Argentine	16.00	1,000
Buenos Aires, Argentine	17.00	750
La Plata, Argentine	16.00	1,000
La Plata, Argentine	17.00	750
Montevideo, Uruguay	16.00	1,000
Montevideo, Uruguay	17.00	750
Pernambuco, Brazil	16.00	500
Rio de Janeiro, Brazil	17.00	1,000
Rio Grande do Sul, Brazil	19.50	500
Rosario, Argentine	19.00	750
Santos, Brazil	17.00	1,000
Santos, Brazil	18.50	600
WEST COAST		
Guayaquil, Ecuador to Talcahuana, Chile, inclusive.....	12.00	750
Punta Arenas, Chile	32.50	500
	Coke	
Guayaquil, Ecuador to Talcahuana, Chile, inclusive.....	18.00	525

Conditions.—Coal: Loading 1,500 tons daily; discharge as above indicated, with time counting 24 hours after arrival of vessel, whether in berth or not, Sundays and holidays only excepted. If loading and discharge is not completed within the time specified, demurrage to be paid at the rate of \$1.00 per net registered ton per running day, payable day by day.

Coke.—Loading 800 tons daily; discharge as above indicated, with time counted and demurrage payable under same conditions as apply on coal.

COAL EXPORTS TO ARGENTINA AND BRAZIL

Exports of bituminous coal in gross tons to Argentina and Brazil, by months, during 1919 and two years previous are:

	Argentina 1918		1919		Brazil 1918		1919
January	50,207	11,579	43,484	January	53,127	.....	55,546
February	29,799	22,609	38,993	February	56,993	64,747	67,825
March	44,855	25,623	8,670	March	47,869	27,323	60,296
April	31,612	9,869	14,914	April	51,807	25,097	70,333
May	23,888	14,750	22,589	May	44,281	79,400	109,868
June	17,054	43,035	54,796	June	96,040	93,782	100,778
July	12,743	47,528	28,712	July	12,122	68,362	54,595
August	35,229	.....	69,728	August	132,898	46,877	2,900
September	12,072	2,738	85,684	September	37,391	33,829	20,722
October	29,374	.....	95,865	October	41,707	38,461	71,957
November	16,614	1,168	19,954	November	56,886	59,247	24,699
December	14,116	.....	.....	December	54,021	21,974	4,590
Total	317,563	178,899	483,389	Total	685,142	559,099	644,109

ARGENTINE COAL CONSUMPTION AND IMPORTS

Although coal deposits are known to exist in at least five of the provinces on the western border of Argentina, with the exception of a negligible quantity mined during the war in the Province of San Juan, the country is wholly dependent upon imports for her coal supply. The annual normal importation, based upon 1913, was 4,000,000 metric tons of coal and 21,000 metric tons of coke. Prior to 1914, Great Britain because of lower freight rates to Buenos Aires, of better developed shipping facilities, of large storage depots in Argentina and of investment in Argentina industrial enterprises dominated the market.

Official Argentine statistics covering the imports from 1910 to 1918 showed the following:

Kinds of fuel and years Coal	Total Metric tons	From Great Britain		From United States	
		Metric tons	Per cent.	Metric tons	Per cent.
1910	3,326,356	3,296,888	99.1	7,480	0.2
1911	3,717,026	3,627,840	97.6	39,324	1.1
1912	3,707,956	3,499,989	94.4	115,901	3.1
1913	4,046,278	3,977,650	98.3	56,206	1.4
1914	3,421,526	3,242,519	94.8	169,786	4.9
1915	2,543,887	1,844,845	72.5	651,747	25.6
1916	1,884,781	1,038,024	55.1	825,079	43.6
1917	707,712	.....	...	.....	...
1918	821,974	.....	...	.....	...
Coke					
1910	27,152	27,152	100.0	.....	0.0
1911	28,922	28,373	98.1	104	0.4
1912	31,087	24,295	78.1	5,292	17.0
1913	21,317	20,702	97.1	.....	0.0
1914	14,657	13,606	92.8	.....	0.0
1915	11,142	9,563	85.8	1,579	14.1
1916	10,496	3,488	33.2	6,960	66.3
1917	3,904	.....	...	.....	...
1918	6,775	.....	...	.....	...

The five provinces in which coal is known to exist are La Rioja, San Juan, Mendoza, Neuquen, Chubut and Santa Cruz. The inaccessibility of these deposits to the industrial centers of the country, however, as well as high cost of operation, and inferior quality, made prewar exploitation impossible. In 1917 a small mine was opened in the San Juan province and produced about 400 tons per month. The government railways have been experimenting recently with Mendoza and Chubut coals; that from the first province proved unsatisfactory, while the samples taken from the Epuen field in Chubut have been more satisfactory. One analysis showed a small volatile and a high fixed carbon quantity with approximately 6,682 calories.

COAL EXPORTS TO WEST INDIES

Exports of bituminous coal in gross tons to Cuba and other West Indies by months during 1919 and two years previous were:

	Cuba				Other West Indies		
	1917	1918	1919		1917	1918	1919
January	110,467	76,938	103,639	January	70,737	9,089	16,360
February	124,783	145,104	40,644	February	32,286	13,313	16,965
March	151,246	170,078	38,107	March	55,507	45,213	21,548
April	112,802	212,355	58,173	April	41,174	28,063	31,302
May	153,750	137,048	90,112	May	41,561	25,717	11,914
June	115,091	110,959	84,198	June	34,483	25,944	30,136
July	51,193	105,137	75,085	July	23,805	19,438	12,653
August	217,524	105,408	108,216	August	19,373	12,367	36,799
September	80,302	98,022	140,546	September	23,473	21,026	29,699
October	117,585	89,941	115,366	October	22,173	12,064	37,157
November	77,315	99,697	59,835	November	33,290	21,028	10,345
December	98,497	89,779	57,478	December	28,566	21,239	19,633
Total	1,410,564	1,440,457	971,399	Total	402,812	254,501	274,511

COAL EXPORTS TO MEXICO AND PANAMA

Exports of bituminous coal in gross tons to Mexico and Panama by months during 1919 and two years previous were:

	Mexico				Panama		
	1917	1918	1919		1917	1918	1919
January	15,647	9,369	9,845	January	49,993	34,400	6,135
February	22,278	12,967	5,142	February	54,938	42,335	8,661
March	26,492	13,971	5,429	March	41,608	21,959	5,290
April	16,113	12,675	6,200	April	48,094	70,870	19,088
May	12,484	14,181	6,810	May	45,111	50,108	.....
June	12,905	13,508	14,312	June	38,348	50,871	.....
July	5,334	11,536	5,824	July	23,849	55,656	.....
August	10,889	13,181	10,953	August	72,274	56,342	.....
September	18,941	22,746	10,892	September	15,786	94,795	2,745
October	11,618	19,186	8,757	October	94,681	17,605	5,396
November	7,317	9,475	8,932	November	68,197	3,188	8,482
December	25,156	9,836	8,489	December	66,083	6,000	16,300
Total	184,345	162,631	101,679	Total	618,962	504,129	72,097

CHILEAN PRODUCTION AND IMPORTS

Before the war little American coal had been introduced into the Chilean market, but during the war Chile turned to the United States to supply the fuel which could not be obtained from England. American coal and oil were successfully substituted for British coal, and a demand was established. During 1913, the last year before coal exports from Europe were restricted, Chile's consumption of coal was more than 2,800,000 metric tons, about 55 per cent. of which was imported. Great Britain supplied about three-fifths of this amount; the Australian trade was increasing in volume; the United States supplied only a small portion of the total.

The period of the war was characterized by a decrease in total coal imports and by a shifting of the chief source of supply from Great Britain to the United States. The 1914 imports were only affected to a slight degree but during each of the years of 1915, 1916 and 1917 the imports of coal into Chile were less than one-third of the imports of 1913. During these years also the imports from the United States increased, whereas those from Great Britain were so greatly curtailed that by 1917 the relative positions of the two countries had been reversed, and the United States was supplying more than 60 per cent. of the total imports. Only a small amount of coke was imported into Chile prior to the war, but these imports increased until in 1916 and 1917 they totalled more than twice those of 1913.

The source of supply of imported coke also shifted during the war; in 1913 more coke was imported from Germany than from any other country, whereas in 1917 the United States supplied more than two-thirds of the amount imported.

The following table shows the chief countries of origin of the imports of coal and coke into Chile for the years 1913, 1914, 1915, 1916, and 1917:—

Commodities and countries of origin	1913 Metric tons	1914 Metric tons	1915 Metric tons	1916 Metric tons	1917 Metric tons
Coal—					
England	924,430	527,576	201,718	163,533	73,306
Australia	457,873	516,889	155,541	74,416	45,443
United States	98,979	143,404	51,375	165,437	288,424
All other	59,465	69,690	2,683	4,322	494
Total	1,540,747	1,257,559	411,317	407,708	406,667

Commodities and countries of origin	1913 Metric tons	1914 Metric tons	1915 Metric tons	1916 Metric tons	1917 Metric tons
Coke—					
Germany	23,746	20,031	25	.....	.....
England	13,207	9,588	27,994	54,492	25,480
United States	1,000	1,885	20,172	57,519	72,696
All other	8,384	15,407	1,960	165	21
Total	46,337	46,911	50,151	112,176	98,197

Chile itself has been the most important coal producing country of the continent for many years, but the native product is very soft, and is about 20 per cent. inferior to good British, Australian, or American coal. All the coal mined, except that coming from the Penco deposits, produces a compact coke, which, however, is not serviceable for metallurgical purposes. Despite the fact that importation of coal into Chile was cut to about one-third of the normal amount during the war, it was found impossible to increase native production because of inadequate transportation facilities. The following table shows the number of coal mines in operation during the period 1913-1916, the number of employees, and the gross production, which represents the total output of the mines for the successive years of the period:—

Years	Number of mines	Number of employees	Gross production Metric tons
1913	17	8,414	1,283,450
1914	17	8,105	1,086,946
1915	17	8,160	1,171,564
1916	15	9,252	1,418,119

The Chilean coal fields extend along or near the coast from 36 degs. south latitude into the Magellanic lands, the most important mines being at Coronel, Lota, Curanilahue and Lebu. In addition to these more important deposits, small fields, known as the Penco deposits, occur north of the Bay of Arauco in the bays of Colombo and Talcahuano. There are also mines near Punta Arenas producing an inferior grade of lignite. The mines at Coronel and Lota have workings below the sea in horizontal veins 1,200 to 1,400 metres from shore, which a government engineer claims will be difficult to exploit beyond 1.86 miles. Notwithstanding this limitation, the quantity of coal in sight for the future in these mines is estimated to be not less than 39,600,000 tons. The Curanilahue field is reported to be the most extensive one in the republic, but has not been fully developed because of the lack of adequate transportation facilities. The reserve is calculated to be 120,000,000 tons. The principal mines in the Penco district are the Cerro Verde, the Lirquen and the Rosal. The coals of this district differ from the others of Chile in that they are more friable and produce pulverulent coke. The mines at the mouth of the Lebu River are said to be the oldest in Chile, but they have been difficult to develop because of the poor condition of the port of Lebu.

AMERICAN COAL TO ITALY

Exports of bituminous coal from the United States to Italy during 1916, 1917 and 1919 are shown in the tabulation following. During 1918 bituminous shipments totaled 9,994 tons and loadings were confined to the first four months, viz.: January, 4,505 tons; February, 1,000; March, 2,473, and April, 2,016 tons. In December, 260 tons of anthracite were exported.

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	1916	1917	1919		1916	1917	1919
January	100,039	71,773	11,303	August	218,525	41,519	313,785
February	161,614	52,871	4,933	September	94,430	33,201	442,208
March	142,322	72,332	17,197	October	98,928	31,094	423,939
April	299,557	72,771	32,309	November	33,399	49,685	45,933
May	160,465	41,139	35,908	December	73,106	7,205	11,040
June	230,968	58,516	126,881	Total	1,735,072	560,628	1,632,995
July	211,718	28,522	167,559				

ITALIAN IMPORTS OF COAL AND COAL PRICES

According to approximate statistics furnished by the United States Consular service, the total arrivals of coal for all Italy amounted in 1919 to 7,120,669 tons. The following figures give the total imports of coal into Italy for each year from 1910 to 1919:

	Tons		Tons
1910.....	8,428,115	1915.....	8,348,176
1911.....	9,595,832	1916.....	8,065,041
1912.....	10,057,228	1917.....	5,283,723
1913.....	10,873,608	1918.....	6,718,871
1914.....	9,722,813	1919.....	7,120,659

The imports for 1918 and 1919 although showing an increase over those of 1917 were far below the minimum amount necessary for Italian industry as shown by the prewar figures.

The following table shows the total imports of coal for all Italy for 1919 by months and countries of origin:

Months	England Tons	U. S. Tons	France Tons	Belgium Tons	Total Tons
January	389,419	.....	32,772	.....	422,191
February	495,568	2,127	9,294	.....	506,989
March	393,810	9,638	9,990	.....	413,438
April	400,359	26,184	*39,592	.....	466,135
May	510,582	37,258	*71,898	18,817	635,555
June	527,853	63,774	*12,910	17,957	622,524
July	454,386	115,291	*4,460	12,573	586,710
August	335,676	250,428	*21,951	21,526	629,581
September	362,119	346,195	*18,623	20,117	747,054
October	266,280	510,099	.....	6,830	783,209
November	448,530	329,359	.....	13,568	791,457
December	491,721	18,451	.....	5,644	515,816
Total	5,076,303	1,705,804	221,520	117,032	7,120,659

*In these figures are included the shipments of coal from the Sarre (via Domodossola) and up to the month of August the coal imported by rail.

The decrease in the imports of American coal in December was due to the coal strike and consequent temporary prohibition of export. The variation between the total imports here credited to the United States and the exports shown elsewhere under the head of "American Coal to Italy" is due, of course, to the fact the figures given here are by month of arrival in Italy and those under "American Coal to Italy" by month of shipment from the United States.

According to the lists of the Commissariat General for Fuel, the prices for coal during 1919 were, per ton, as follows, in lire:

Type	Lire per Ton†						
	Jan.	May	July	Sept.	Oct.	Nov. 5	Nov. 15
English	200	175	240	210	180	355	395
French	180	160	210	240	250	290	350
American .....	...	210	270	330	340	380	420
Belgian .....	...	...	240	270	280	355	395
German .....	...	...	...	270	289	355	395

† At normal rate of exchange a lira is equivalent to 19.3 cents in United States money.

These prices, however, have been almost always exceeded in the sales made by private importers and dealers; especially for British coal.

BUNKER TONNAGES AT NORTH ATLANTIC PORTS

Bunker tonnages laden on vessels engaged in foreign trade, as shown by the reports of the Bureau of Foreign and Domestic Commerce for the principal North Atlantic ports, were 737,501 gross tons, or approximately 14.6 per cent. more in 1919 than in 1918. The comparative figures by months for the two years at New York, Philadelphia, Baltimore and Hampton Roads were as follows:

Month	New York		Philadelphia		Baltimore		Hampt. Roads	
	1918	1919	1918	1919	1918	1919	1918	1919
January	190,456	211,099	25,850	24,697	14,900	22,217	113,557	112,932
February ...	169,936	209,619	12,326	23,819	20,167	21,819	177,733	69,845
March	182,516	154,527	19,681	39,853	17,648	28,636	113,364	143,735
April	156,516	259,671	19,442	47,520	16,654	30,926	96,208	140,741
May	167,386	298,991	19,348	38,198	16,719	45,296	94,312	141,275
June	191,440	294,354	20,228	34,750	17,054	44,176	117,188	141,944
July	215,833	290,013	18,770	43,821	21,859	43,535	127,712	144,832
August	223,888	285,733	23,103	57,967	25,476	65,299	84,753	186,624
September ..	191,859	274,893	17,827	68,730	22,946	77,837	108,548	211,608
October	231,894	128,543	21,661	83,300	31,713	86,792	64,473	273,078
November ..	185,023	277,270	21,952	43,420	20,438	30,099	62,400	122,693
December ...	181,691	226,178	26,839	32,967	19,415	28,338	78,342	90,175
Total	2,288,446	2,912,891	247,036	539,042	244,989	524,970	1,238,413	1,779,482

In addition to the figures above shown, the Maine and New Hampshire customs district reported 14,391 tons and the Massachusetts, 148,524 tons in 1919.

COAL PRODUCTION OF ALASKA

The production of coal in Alaska* in 1918 was 75,606 tons, valued at \$411,850, compared with 53,955 tons, valued at about \$265,317, in 1917. This production was by far the largest in the history of coal mining in Alaska, being 40 per cent. larger than the output for 1917, which was also greater than that of any previous year. It is believed that a substantial coal-mining industry has at last begun in Alaska. The larger part of the output in 1918 came from the Matanuska field, which produced 63,092 tons. The remainder came from eight or ten small mines in various parts of the Territory. All these mines, except in the Matanuska and Bering River fields and at Port Graham, produced coal for local use under free-use permits.

In the Matanuska field the Eska Creek mines were operated regularly throughout the year by the Alaskan Engineering Commission to supply fuel for railroad and other government use. At the Chickaloon mine, also operated by the Alaskan Engineering Commission, the work has consisted primarily of exploration and development, and only a small quantity of coal, won incidentally, has been produced. In 1918 for the first time

*Martin, G. C., The Alaskan Mining Industry in 1918. U. S. Geological Survey Bulletin 712-A. 1919, pp. 24-26.

Matanuska coal was shipped beyond Anchorage. Private operations preparatory to mining were continued by two lessees in the Matanuska field and some coal was mined by one of them, but their mines are not yet regularly productive.

The lignite fields of the Cook Inlet-Susitna district rank next to the Matanuska coal fields in point of production for 1918. A considerable quantity of lignite that was mined near Bluff Point was shipped to towns and canneries on Cook Inlet. A lignite mine on Cache Creek, in the Yentna district, was operated during part of the year to supply fuel for a gold dredge. The Little Susitna mine supplied part of the fuel for the town of Anchorage. It is reported that some coal was mined at Port Graham.

In the Nenana field no leases have yet been granted, but two small mines were opened under mining permits and a small quantity of lignite was mined for use in the construction of the railroad.

It is reported that in the Bering River field the railroad has been extended from its temporary terminus on Bering River to the mine of the Alaska Petroleum & Coal Co. in the eastern part of the field and that small shipments of semi-anthracite coal were made late in the year. A lease was granted in 1918 to another company for a tract of semibituminous coal land in the western part of the field, and it is reported that extensive operations preparatory to mining are being undertaken.

In northern Alaska lignite mined near Unalaklik, on Norton Sound, was shipped to Nome and St. Michael, and lignite mined on Kobuk River was shipped to Kotzebue. It was reported that lignite would be mined on Kugruk River, Seward Peninsula, during the winter of 1918-19 for use at the placer mines on the Inmachuk.

The following tables give the estimated production of coal in Alaska since 1888. The production for 1888 to 1896 is estimated from the best data available but is only approximate. The figures for 1897 to 1918 are based for the most part on data supplied by the operators. Most of the coal mined before 1916 was lignite. There was a small production of bituminous coal from the west end of the Bering River field in 1906. The table does not include 855 tons of coal mined in the Bering River field in 1912 and 1,100 tons mined in the Matanuska field in 1913 for test by the United States Navy.

Coal produced in Alaska, 1888-1918

Year	Quantity Short tons	Value	Year	Quantity Short tons	Value
1888-1896.....	6,000	\$84,000	1908.....	3,107	\$14,810
1897.....	2,000	28,000	1909.....	2,800	12,300
1898.....	1,000	14,000	1910.....	1,000	15,000
1899.....	1,200	16,800	1911.....	900	9,300
1900.....	1,200	16,800	1912.....	355	2,840
1901.....	1,300	15,600	1913.....	2,300	13,800
1902.....	2,212	19,048	1914.....	.....	.....
1903.....	1,447	9,782	1915.....	1,400	3,300
1904.....	1,694	7,225	1916.....	13,073	52,317
1905.....	3,774	13,250	1917.....	53,955	265,317
1906.....	5,541	17,974	1918.....	75,606	411,850
1907.....	10,139	53,600	Total.....	192,003	\$1,096,913

The following table shows the consumption of coal in Alaska, including both local production and imports, since 1899. Most of the coal shipped to Alaska was bituminous, but a little was anthracite.

Coal consumed in Alaska, 1899-1918, in short tons

Year	Production in Alaska, chiefly subbituminous and lignite	Imported from States, chiefly bitum. from Washington	Total foreign coal, chiefly bitum. from Brit. Columbia	Total coal consumed
1899.....	1,200	10,000	*50,120	61,320
1900.....	1,200	15,048	*56,623	71,871
1901.....	1,300	24,000	*77,674	102,974
1902.....	2,212	40,000	*68,363	110,575
1903.....	1,447	64,626	*60,605	126,678
1904.....	1,694	36,689	*76,815	115,198
1905.....	3,774	67,713	*72,612	144,099
1906.....	5,541	69,493	*47,590	122,624
1907.....	10,139	46,246	*93,262	149,647
1908.....	3,107	23,893	*86,404	113,404
1909.....	2,800	33,112	69,046	104,958
1910.....	1,000	32,098	58,420	91,518
1911.....	900	32,255	61,845	95,000
1912.....	355	27,767	68,316	96,438
1913.....	2,300	69,066	56,430	127,796
1914.....	.....	41,509	46,153	87,662
1915.....	1,400	46,329	29,457	77,186
1916.....	13,073	44,934	53,672	111,679
1917.....	53,955	58,116	56,589	168,660
1918.....	75,606	51,520	37,986	165,112
Total.....	183,003	834,414	1,227,982	2,245,399

*Fiscal year ending June 30.

The 1919 output was estimated at 53,000 tons.

Shipments of coal from the United States to Hawaii during the past five calendar years have been as follows: 37,942 tons in 1919; 65,184 tons in 1918; 35,216 tons in 1917; 10,444 tons in 1916, and 4,262 tons in 1915.

SHIPMENTS FROM ROCHESTER CUSTOMS DISTRICT

Tonnage statistics covering shipments from the Lake Ontario loading points of Charlotte, Oswego, Fair Haven and Sodus Point to Canadian destinations, shown in earlier editions of *THE COAL TRADE*, are no longer available in segregated form as these ports are now embraced in the Rochester Customs District and only the total loadings are published. During 1919, these figures, by months, were as follows:

	Anth. Tons	Bitu. Tons		Anth. Tons	Bitu. Tons
January	2,876	53,654	July	91,383	70,306
February	3,069	45,881	August	82,574	46,956
March	1,268	19,450	September	56,607	53,120
April	34,661	3,203	October	48,875	60,935
May	75,461	25,894	November	37,478	5,878
June	74,562	81,946	December	6,003	15,933
			Totals	514,817	488,156

In 1918 the totals were 608,121 tons of anthracite and 1,070,474 tons of bituminous. Shipments of anthracite, as furnished by local representatives of the Treasury Department, in 1918 were as follows: Oswego, 403,292 gross tons; Fair Haven, 84,143 gross tons.

Shipments from 1910 to 1916 in gross tons were as follows:

	1910	1911	1912	1913	1914	1915	1916
Oswego	574,316	681,275	575,254	702,980	676,868	709,268	336,761
Charlotte	865,201	850,927	1,107,436	1,322,250	827,498	942,901	993,172
Fair Haven	99,030	119,388	165,330	116,825	133,968	130,702	104,556
Sodus Point ...	31,815	64,790	49,564	64,372	47,095	51,846	168,281
Total	1,570,362	1,716,377	1,897,584	2,206,427	1,685,429	1,834,717	1,602,770

CANADIAN COAL IMPORTED INTO UNITED STATES

The imports of bituminous coal from Canada into the United States, by months, during 1917, 1918 and 1919 were:

Month	1917	1918	1919	Month	1917	1918	1919
January ..	94,639	105,039	72,784	August ..	67,477	104,700	36,216
February..	107,988	83,918	55,834	September	111,196	112,705	72,490
March ...	110,446	118,003	68,965	October ..	130,680	133,722	98,822
April	87,862	89,684	52,562	November	145,635	90,402	119,782
May	69,596	101,309	73,804	December	103,117	62,973	106,537
June	71,032	139,822	31,044	Total ..	1,250,709	1,250,933	825,123
July	108,285	108,656	36,783				

DUTY ON COAL INTO CANADA

Anthracite is admitted free of duty.

Bituminous imported into Canada is subject to a fixed tariff of 53 cents per ton. In addition a special duty of 7½ per cent. ad valorem was in effect in February, 1915, to the spring of 1919 for the purpose of alleviating the financial situation arising from the war. A duty of 7½ per cent. ad valorem is charged on coke. Slack is subject to a duty of 14 cents a ton.

There were 18,463 mining machines in use in the bituminous mines in 1918, as compared with 17,235 in 1917, according to the United States Geological Survey.

COAL AND COKE SHIPPED TO CANADA

Exports of coal and coke from the northern border of the United States into Canada during 1918 and 1919 are shown in the tables following. The first table covers the movement in gross tons by customs districts.

District	Anthracite		Bituminous		Coke	
	1918	1919	1918	1919	1918	1919
Buffalo	2,483,761	2,431,091	3,555,576	2,193,852	514,296	191,842
Dakota	3,165	4,742	32,455	34,064	2,253	3,891
Duluth-Superior	1,092	16,634	40,936	43,641	521	664
Michigan	11,451	530	1,815,986	1,013,018	335,175	92,776
Ohio	34,976	56,264	7,434,259	5,260,883	159,064	21,135
Rochester	648,171	519,817	1,106,547	487,146	5,513	3,479
St. Lawrence..	1,356,842	1,335,903	2,472,644	1,572,732	33,745	41,964
Vermont	21,497	20,086	150,173	40,798	4,544	1,252

In addition to the districts shown, approximately 5,083 tons of coal were exported from the Massachusetts district and 14,210 tons of coal and coke from the Maine and New Hampshire district.

The next table, showing the exports by months, includes not only the totals in the first table, but scattering shipments through other districts.

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Month	Anthracite		Bituminous		Coke	
	1918	1919	1918	1919	1918	1919
January	238,757	362,268	455,377	768,770	57,163	38,447
February	226,363	210,721	578,442	446,429	57,351	29,490
March	387,035	105,093	849,282	352,883	94,648	18,528
April	329,113	282,217	1,128,549	501,940	97,739	25,336
May	418,642	396,850	1,766,785	1,088,026	107,361	14,643
June	370,675	471,825	1,803,407	1,430,741	103,414	28,642
July	390,331	484,240	1,881,705	1,338,108	109,257	28,941
August	405,758	497,592	1,959,017	1,337,686	89,767	37,763
September	440,828	472,916	1,822,318	1,411,970	90,520	40,021
October	453,650	425,511	1,660,229	1,448,605	97,466	47,882
November	428,436	301,773	1,384,147	336,641	99,399	19,945
December	289,589	338,428	903,210	208,091	67,345	26,695
Total	4,379,177	4,349,164	16,192,468	10,669,890	1,071,430	356,333

As will be seen by the foregoing tables, shipments of anthracite to the Dominion showed little change from 1918, while bituminous and coke lost heavily.

SHIPMENTS FROM LAKE ERIE PORTS TO CANADA

Shipments of bituminous cargo coal from Lake Erie ports to Canadian destinations during the past two years, as shown by the reports of the Cleveland Ore and Coal Exchange, were as follows:

Port and Railroad	Lake Superior	Soo Ports and River Points	Detroit and St. Clair River	Lake Erie	Lake Ontario and St. Lawrence	Lake Huron and Georgian Bay	Total
1919							
Toledo							
Hocking Valley	72,866	109,311	48,048	....	19,575	6,993	256,793
T. & O. C.	32,721	456,916	....	....	1,600	11,379	592,607
B. & O.	37,522	....	....	....	22,932	....	60,454
Sandusky							
Pa. Co.	32,760	124,319	96,074	....	12,731	5,868	270,742
Huron							
W. & L. E.	226,719	....	13,919	....	16,647	39,097	296,382
Lorain							
B. & O.	520,385	20,944	17,894	....	62,902	327,832	949,957
Cleveland							
Pa. Co.	467,284	43,567	168,859	1,808	34,114	230,063	945,695
Erie							
Fairport							
B. & O.	1,219	....	....	....	4,882	....	6,101
Ashtabula							
N. Y. C.	30,330	26,482	6,181	....	110,962	24,472	198,427
Pa. Co.	28,204	21,084	9,098	30,966	241,460	55,222	386,094
Conneaut							
B. & L. E.	20,773	5,715	4,982	11,513	13,587	3,699	60,269
Erie							
Pa. Co.	84,745	2,458	....	3,543	346,945	31,803	469,494
Pa. R. R.	26,064	....	....	1,563	99,310	4,120	130,047
Total	1,580,642	810,796	364,065	49,393	987,647	740,529	4,533,062
1918							
Toledo							
Hocking Valley	149,511	227,060	49,208	....	56,848	34,543	517,170
T. & O. C.	187,035	313,263	145,023	....	6,303	36,491	688,115
B. & O.	23,773	206,458	12,606	....	99,080	23,688	344,606
Sandusky							
Pa. Co.	19,546	232,170	26,373	4,517	26,915	5,591	315,112
Huron							
W. & L. E.	316,326	34,206	92,040	32,965	173,719	649,265

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Port and Railroad	Lake Superior	Soo Ports and River Points	Detroit and St. Clair River	Lake Erie	Lake Ontario and St. Lawrence	Lake Huron and Georgian Bay	Total
Lorain							
B. & O.....	612,176	66,030	10,227	....	105,980	397,905	1,192,218
Cleveland							
Pa. Co.....	574,218	20,030	187,737	....	182,256	460,771	1,426,012
Erie.....	33,528	....	2,686	....	1,627	8,930	46,770
Fairport							
B. & O.....	10,130	....	2,773	....	....	12,278	25,181
Ashtabula							
N. Y. C.....	61,022	23,342	2,935	8,409	266,987	11,983	374,678
Pa. Co.....	28,742	16,577	....	7,910	158,139	10,236	221,654
Conneaut							
B. & L. E.....	4,638	2,477	6,323	4,008	119,538	18,392	155,346
Erie							
Pa. Co.....	87,248	2,513	....	3,566	277,359	1,588	372,274
Pa. R. R.....	44,433	....	....	828	53,069	....	98,330
Total	2,152,326	1,143,096	537,989	29,238	1,367,066	1,196,065	6,425,730

CANADIAN COAL AND COKE PRODUCTION

Canadian coal production in 1919 showed a decrease of 1,391,626 tons, or 9.3 per cent., over 1918 figures, while the value declined 2.1 per cent. The total production, which includes sales, colliery consumption, coal used in coking, etc., was 13,586,300 net tons, as compared with 14,977,926 tons in 1918. The total output, including waste and unmarketable slack, was 14,041,655 tons in 1919 and 15,460,385 tons in 1918.

The production by provinces during the past five years was as follows:

	1915	1916	1917	1918	1919
Nova Scotia	7,463,370	6,912,140	6,327,091	5,818,562	5,702,316
British Columbia	2,065,613	2,584,061	2,433,888	2,568,589	2,429,211
Alberta	3,360,818	4,559,054	4,736,368	5,972,816	4,893,730
Saskatchewan	240,107	281,300	355,455	346,847	381,967
New Brunswick	127,391	143,540	189,095	268,312	177,976
Yukon Territory	9,724	3,300	4,872	2,900	1,100
Total	13,267,023	14,483,395	14,046,759	14,977,926	13,586,300

The 1919 production included 73,839 tons of anthracite, all from one mine in Alberta; 10,629,697 tons of bituminous coal and 2,882,710 tons of lignite. The 1918 production included 115,405 tons of anthracite; 11,636,190 tons of bituminous and 3,226,331 tons of lignite.

As will be seen from the foregoing figures, Saskatchewan, with a gain of 35,120 tons, was the only province to show an increase in production. Compared with 1918 figures, the decrease in production for the other provinces were as follows: Nova Scotia, 116,246 tons or less than two per cent.; New Brunswick, 90,236 tons or 33.6 per cent.; Alberta, 1,079,086 tons or 18 per cent.; British Columbia, 139,378 tons or 5.4 per cent., and Yukon Territory, 1,800 tons or 62 per cent.

Imports and exports, in net tons, were as follows:

IMPORTS

	1914	1915	1916	1917	1918	1919
Anthracite	4,435,010	4,077,192	4,570,815	5,320,198	4,785,160	4,952,675
Bituminous	7,776,415	6,474,683	9,504,552	15,537,262	16,893,427	12,356,162
Coke	553,046	637,857	757,116	970,106	1,165,590	383,374
Bituminous dust ..	2,509,632	2,580,141	3,505,236	.....	.....	.....
Total	15,274,103	13,769,873	18,622,853	21,827,566	22,844,177	17,692,211

The 1919 output of coke was 1,160,470 tons. In this production 854,835 tons of domestic and 1,025,706 tons of imported coal were used. The output averaged .617 tons per ton of coal charged. The total coke used, or sold by producers, was 1,133,680 tons, with an average value of \$8.62 per ton. Of the total output 1,036,229 tons or 89.3 per cent. was by-product coke. By provinces the production was:

	1918	1919	Inc. over 1918
Nova Scotia	581,870	580,433	* 1,437
Ontario	431,970	649,506	217,516
Alberta	32,801	.....	* 32,801
British Columbia	211,643	100,356	* 111,287
Total	1,258,284	1,160,470	* 97,814

During the year ovens were operated at Sydney and Sydney Mines, N. S.; Hamilton and Sault Ste. Marie, Ont.; Fernie, Michel, Anyot and Union Bay, B. C. At the close of 1919 there were 587 ovens in operation and 2,209 were idle.

The estimated consumption of coal, based upon production, exports and coal imported as "entered for consumption" amounted to 28,768,099 tons. The division was approximately as follows: Anthracite, 5,026,568; bituminous, 20,858,821, and lignite, 2,882,710 tons. In 1918 the estimated consumption was 34,711,832 tons, divided as follows: Anthracite, 4,900,565 tons; bituminous, 26,544,936 tons, and lignite, 3,226,331 tons.

For current production statistics, tonnages carried by leading railroads and the latest developments in the various producing fields and primary markets see the **COAL TRADE JOURNAL**.

Coal production in British Columbia in recent years has been as follows:

Year	Gross Tons	Year	Gross Tons	Year	Gross Tons
1908.....	1,677,849	1912.....	2,628,804	1916.....	2,084,093
1909.....	2,006,476	1913.....	2,137,483	1917.....	2,149,975
1910.....	2,800,046	1914.....	1,810,967	1918.....	2,302,245
1911.....	2,193,062	1915.....	1,611,129	1919.....	2,357,218

These figures, reported by the Provincial minister of mines, exclude the coal used in coke-making, and therefore are different than those shown under the article headed "Canadian Coal and Coke Production," appearing on page 220 in this volume. These latter figures also cover 1919 statistics in net tons.

Coke production has been as follows:

Year	Gross Tons	Year	Gross Tons	Year	Gross Tons
1911.....	66,005	1914.....	234,577	1917.....	159,905
1912.....	264,333	1915.....	245,871	1918.....	188,967
1913.....	286,045	1916.....	267,725	1919.....	98,598

The gross coal tonnage for the period 1913-19 was as follows:

	1913	1914	1915	1916	1917	1918	1919
Crowsnest district.....	1,331,725	955,183	852,572	882,270	551,751	732,864	659,408
Coast district.....	1,239,085	1,211,245	1,120,008	1,608,310	1,846,964	1,845,390	1,843,455
Minneka Teikwa.....						470	1,580

COAL PRODUCTION AND DISTRIBUTION IN NOVA SCOTIA

Coal production in the Province of Nova Scotia for the year ending September 30, 1919, showed a falling off of 260,646 gross tons, as compared with the year ending September 30, 1918; sales declined 153,827 tons during the same period. The tonnage of coal consumed in the province was 2,512,718 tons, a decrease of 246,241 tons as compared with 1918. Coal on bank at the close of the reporting year, 76,848 tons, had decreased 54,420 tons when compared with the quantity on hand September 30, 1918.

Production and sales in detail for the years ending September 30, 1918 and 1919, in gross tons, appear in the table below:

Company	Address	Production 1918	Sales 1918	Production 1919	Sales 1919
Dominion Coal Co.	Glace Bay	3,320,309	2,923,840	3,037,599	2,765,260
N. S. S. & C. Co.	Sydney Mines..	498,900	457,128	491,109	423,841
Acadia Coal Co.	Stellarton	281,893	241,267	419,089	375,380
Cumb. Ry. & C. Co.	Springhill	369,105	298,133	374,351	304,921
Inver. Ry. & C. Co.	Inverness	201,524	161,348	144,414	109,170
Intercolonial C. Co. ...	Westville	181,624	153,557	173,761	146,865
Maritime C., Ry. & P. Co.	Maccan	188,454	175,195	161,427	150,156
Minudie Coal Co.	River Herbert.	25,761	20,980	23,111	20,514
Bras d'Or Coal Co.	Little Bras d'Or	46,511	40,610	40,930	36,737
Total		*5,265,404	*4,613,484	*5,004,757	*4,459,648

* Includes totals from companies not listed in this table.

The distribution of the Nova Scotia tonnage in recent years is shown in the next table:

Destination	Year Ending September 30					
	1914	1915	1916	1917	1918	1919
Nova Scotia	2,203,336	2,115,431	2,826,300	2,880,787	2,758,959	2,512,718
New Brunswick ...	680,491	603,297	772,533	888,162	882,608	755,832
Prince Edward Is..	95,781	83,188	82,924	103,167	78,063	78,450
Newfoundland	225,589	208,692	251,123	236,530	219,185	272,229
Quebec	2,381,582	1,828,769	994,944	303,012	134,449	344,662
United States	300,661	532,684	455,154	342,100	269,080	75,813
Other countries ...	9,807	18,283	5,790	7,342	5,395	78,808
Bunkers, etc.	267,349	367,560	539,822	382,972	258,349	335,395
Total, gr. tons..	6,164,600	5,757,907	5,993,710	5,143,074	4,613,484	4,459,648

The trend of sales during the past twelve years is shown in the following summary:

Year	Tons	Year	Tons	Year	Tons
1908.....	5,372,478	1912.....	6,177,615	1916.....	5,993,710
1909.....	4,597,677	1913.....	6,478,709	1917.....	5,143,074
1910.....	5,275,925	1914.....	6,164,000	1918.....	4,613,484
1911.....	5,556,464	1915.....	5,757,907	1919.....	4,459,648

The production of coal by counties during the past three years was as follows:

County	Year Ending September 30		
	1917	1918	1919
Cape Breton	4,328,723	3,873,594	3,585,200
Inverness	221,804	205,076	165,667
Antigonish .....	.....	280	.....
Pictou	621,357	536,506	653,331
Cumberland	631,776	649,948	593,628
Victoria	6,931
Total	5,803,660	5,265,404

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NOVA SCOTIA SALES SINCE 1785

Nova Scotia sales statistics go back as far as 1785, when the movement of 1,668 tons was reported. During the five years following, 12,681 tons were sold. The record by decades since that period is as follows:

Ten years ending	Total tons	Ten years ending	Total tons
1800.....	51,048	1860.....	2,399,829
1810.....	70,452	1870.....	4,927,339
1820.....	91,527	1880.....	7,377,426
1830.....	140,820	1890.....	13,910,136
1840.....	839,981	1900.....	20,552,536
1850.....	1,533,798	1910.....	45,898,410

EXPORTS OF COAL TO UNITED STATES SINCE 1850

Inasmuch as between 25 and 33½ per cent. of the bituminous coal imported into the United States is mined in Nova Scotia, the history of those shipments as shown in the reports of the Provincial department of public works and mines present an interesting study. The figures, which go back to 1850, are as follows:

Years	Tons	Duty	Years	Tons	Duty
1850.....	118,173	24 ad.	1885.....	34,483	"
1851.....	116,274	"	1886.....	66,003	\$0.75
1852.....	87,542	"	1887.....	73,893	"
1853.....	120,764	"	1888.....	30,198	"
1854.....	139,125	Free	1889.....	29,987	"
1855.....	103,222	"	1890.....	50,854	"
1856.....	126,152	"	1891.....	25,481	"
1857.....	123,335	"	1892.....	13,833	"
1858.....	186,743	"	1893.....	16,099	"
1859.....	122,720	"	1894a.....	79,837	\$0.40
1860.....	149,289	"	1895b.....	73,097	"
1861.....	204,457	"	1896c.....	174,919	"
1862.....	192,612	"	1897d.....	106,279	\$0.67
1863.....	282,775	"	1898.....	98,027	"
1864.....	347,594	"	1899.....	153,188	"
1865.....	465,194	"	1900.....	624,273	"
1866.....	404,252	"	1901.....	591,086	"
1867.....	338,492	\$1.25	1902.....	751,382	"
1868.....	228,182	"	1903.....	968,832	"
1869.....	257,485	"	1904.....	713,170	"
1870.....	168,180	"	1905.....	652,588	"
1871.....	165,431	"	1906.....	769,775	"
1872.....	154,092	\$0.75	1907.....	616,312	"
1873.....	254,760	"	1908.....	499,634	"
1874.....	138,386	"	1909.....	324,786½	"
1875.....	89,746	"	1910.....	290,668	"
1876.....	71,634	"	1911.....	332,801	"
1877.....	118,216	"	1912.....	412,531	"
1878.....	88,495	"	1913.....	468,000	"
1879.....	51,641	\$0.75	1914.....	300,661½	Free
1880.....	123,423	"	1915.....	532,684½	"
1881.....	113,728	"	1916.....	455,154½	"
1882.....	99,302	"	1917.....	342,100½	"
1883.....	102,755	"	1918.....	269,080	"
1884.....	64,515	"	1919.....	75,813	"

Note.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably underestimated.

a Nine months only.

b Note.—After August 1, 1894, duty on round coal, 40 cents; on culm and slack, 15 cents.

c Fiscal year begins October 1, and ends September 30 (Chap. 4, Acts 1893).

d On July 24, 1897, the duty was made 67 cents.

On October 3, 1913, duty was removed.

VENEZUELAN PRODUCTION AND IMPORTS

There has been a gradual increase in the output of coal in Venezuela. Production statistics for recent years show an average of 6,222 gross tons for 1911-13; 8,755 for 1914; 13,551 for 1915; 18,289 for 1916; 19,846 for 1917, and 24,779 gross tons for 1918, the latest year for which figures are available. The coal produced is practically all mined at Naricual, Capiricual and Tocatoro near Barcelona and a railroad line has been built especially to transport this coal to the port of Guanta. Both mines and railroad are operated by the national government.

Imports are shown in the following table:

Years	From U. S. Tons	From Gr. Brit. Tons	From Holland Tons	From Germany Tons	Total Tons
Average for 1911-1913	3,268	14,246	331	1,660	19,676
1914	3,982	12,573	5,840	885	23,280
1915	11,216	6,721	1,368	.....	19,305
1916	10,110	9,802	331	.....	20,243
1917	10,266	4,661	.....	.....	14,927
1918	4,570	4,176	.....	.....	8,746

Shipments from United States last year amounted to 496 tons.

Coal imported at La Guaira is partly used there and partly carried by railroads to Caracas; that imported at Puerto Cabello is used principally in that town, but some of it carried inland by a railroad line extending from Puerto Cabello to Caracas. The only exports of coal shown are 500 tons in 1916, 2,000 tons in 1917, and 340 tons in 1918. These shipments were all made to Curacao and were doubtless due to the difficulty of obtaining coal in the United States and Great Britain during those years, owing to war conditions.

The consumption of coal is being largely curtailed by the use of oil for fuel, which is being introduced largely by the railways of the country and by some manufacturing plants. Venezuela is supposed to have very large oil deposits and considerable oil is now produced.

COAL IMPORTED BY ECUADOR

The following table gives the average annual imports of coal into Ecuador for the period 1911-1913, and for the years 1914 to 1919, inclusive, by countries of origin:

Countries of origin	1911-1913 Metric tons	1914 Metric tons	1915 Metric tons	1916 Metric tons	1917 Metric tons	1918 Metric tons	1919 Metric tons
Australia	1,961	11,758	17,752	5,624	19,799	.....	.....
British Columbia . . . .	.....	.....	.....	.....	.....	2,491	.....
British India	131	.....	.....	.....	.....	.....	.....
Germany	111	.....	.....	.....	.....	.....	.....
United Kingdom	53	3,540	.....	.....	.....	.....	.....
United States	15,213	15,451	13,257	19,167	15,992	2,141	2,948

The coal credited to Germany in the table probably originated in England, and that credited to British India was probably Australian coal. In 1912 the import statistics also showed 6,585 metric tons of coal as having come from Chile. This also probably originated in Australia. In 1917 the United States furnished 30 tons of coke in addition to the quantity of coal shown in the table.

No coal is mined in Ecuador.

THE BRITISH COAL INDUSTRY IN 1919

A review of the coal trade in 1919 must largely be a review of labor difficulties. It was very evident early in the year that an increased amount of labor trouble was to be experienced. As early as January 9 the Prime Minister met the Miners' Federation executive when various proposals were discussed. Following this the executive called a national conference which opened at Southport on January 14, and after a private sitting demands were put forward for a six-hour day, for the nationalization of coal mines, for a 30 per cent. advance in wages, and for the preferential treatment of miners with respect to demobilization. These demands originated chiefly from the extremists on the miners' executive, and as from the commencement of the war labor had been invariably pacified by conceding all demands for wage advances, the government were rather in a quandary. Negotiations between the government and the miners' executive took place with a view to a settlement, and on February 12 at another conference at Southport the government's offer (of 1s. per day increase in the war wage allowance) was rejected with the recommendation that a ballot be taken on the question of tendering notices to strike. The result of this ballot, made public on February 24, showed an overwhelming majority for a strike. This led the government to pass the Coal Industrial Commission Act, 1919, and to instruct Mr. Justice Sankey, who was appointed chairman of the commission, to guarantee that the report on wages and hours would be in the hands of the government on March 20. The effect of this was that many highly important matters could not be thoroughly explored by the commission. Of three sectional reports made, the one signed by Mr. Justice Sankey and three other members of the commission was accepted by the government.

The chief recommendations in this report were that, as from July 16, working hours at pits should be reduced from eight to seven, and that as from January 9 (when the demands of the executive were first formulated) workers over 16 years of age should receive an increase of wages of 2s. per shift worked, and those under 16 1s. per shift worked. The arrears of this wage award were paid early in April—the money being found by the government up to the middle of July. In the report it was stated: "Even upon the evidence already given, the present system of ownership and working in the coal industry *stands condemned*, and some other system must be substituted for it, either nationalization or a method of unification by national purchase and/or by joint control." It is difficult to understand how at an inquiry directed to the questions of hours and wages such a statement should be made. No doubt it was the outcome of a statement of Sir Richard Redmayne in his evidence, that, in his opinion, the present system was "extravagant and wasteful," though what he possibly meant was that private ownership was wasteful, but that group working would conduce to economy—he carefully refrained from recommending nationalization. Four further reports were presented on June 20 at the second stage of the sitting of the commission—none of which, however, were accepted by the government.

There has only been one alteration in pit prices as a whole during the year; this was an advance of 6s. per ton on July 21, to cover the increased cost of production in consequence of the Sankey award and as a result of the reduced tonnage with the shorter working hours which commenced on July 16. With the operation of seven-hour shifts day workers at pits were paid the same wages as they had received previously, but in

order that contract workers should be able to earn the same amount they had an advance of 12.2 or 14.3 per cent. (in accordance with the actual average loss of time worked—as compared with eight-hour shifts). The miners' executive claimed that the advance of 6s. per ton in July was not justified, and they brought such pressure to bear on the government that as from December 1 a concession of 10s. per ton was made on all coal used for household and domestic purposes. Pit prices remained unchanged, but under the "Coal (Pit's Mouth) Prices Order and Direction and the Wholesale Coal Prices Order," both dated the 28th day of November, 1919, buyers upon the presentation of the necessary certificate are entitled to deduct 10s. per ton for all coal sold by them for household purposes, and in the case of gas and electricity fuel, the proportion used for domestic purposes. It was fully expected that the government would refund to collieries whatever amounts were deducted, for which purpose they would collect the large surplus from collieries doing a heavy export trade. Nothing definite, however, has yet been done in this direction.

Up to the introduction of the budget, collieries were only allowed to retain five per cent. of their excess profits over and above those of the "standard period," but by the provisions of the budget they could retain 15 per cent. of excess profits, i. e., 40 per cent. was taken by way of excess profits duty, and three-quarters of the remainder (45 per cent.) as coal mines excess payments—thus leaving them with 15 per cent. of excess profits over those of the "standard period." This arrangement would be manifestly unfair, as collieries that were so placed that they could export the bulk of their output would be at a great advantage as against those who had to dispose of their outputs for inland sales at the prices fixed by the Price of Coal (Limitation) Act, 1915. With the subsequent advances allowed, many of the latter are indeed today actually losing money. To equalize matters, a bill was introduced limiting the profits of the trade for the whole country to 1s. 2d. per ton on the output tonnage. This bill, which was retrospective as from March, was thrown out on its second reading, and further legislation, which will also be retrospective, is to be introduced early this year.

The year has seen an increased number of sectional strikes. About March 20 there were a large number of pits stopped owing to the local miners' lodges not receiving instructions from headquarters to continue working after the conclusion of the Coal Commission—notices having been previously suspended. There was a three weeks' county strike in Notts. early in the year on the question of wages, and a five weeks' county strike in Yorkshire in July-August, on the question of the advance contract workers were entitled to in respect to the reduction in working hours. In addition there have been strikes of short duration in most districts.—*The Iron and Coal Trades Review (London)*.

COAL PRODUCTION OF GREAT BRITAIN

ENGLAND	1916	1917	1918	1919
	Gross Tons	Gross Tons	Gross Tons	Gross Tons
Chester	314,004	303,234	264,397	241,659
Cumberland	2,279,295	2,161,550	1,904,324	1,842,153
Derby	16,747,857	16,659,026	14,949,091	14,882,429
Durham	33,742,979	30,842,539	28,404,190	30,999,803
Gloucester	1,712,258	1,720,508	1,444,369	1,434,921
Kent	208,623	255,583	235,819	277,829
Lancaster	21,419,494	21,760,109	19,606,221	19,630,890

THE COAL TRADE

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	1916 Gross Tons	1917 Gross Tons	1918 Gross Tons	1919 Gross Tons
Leicester	3,485,591	3,595,669	3,233,252	3,171,398
Monmouth	14,822,659	13,683,215	13,179,321	13,582,846
Northumberland	11,244,895	10,221,491	9,883,139	10,989,929
Nottingham	12,347,150	12,915,129	11,823,803	11,347,311
Salop	783,971	789,880	727,636	739,594
Somerset	1,310,727	1,277,681	1,170,897	1,209,085
Stafford	13,379,257	13,535,996	11,964,491	12,306,705
Warwick	4,914,105	4,761,561	4,181,111	4,257,254
Westmoreland	941	802	886	891
Worcester	804,813	812,394	708,354	719,711
Yorkshire	40,208,453	40,889,903	35,666,514	38,839,082
Total	179,754,031	176,186,270	159,419,825	160,473,490

WALES

Brecon	580,213	384,652	414,549	481,071
Carmarthen	2,468,774	2,260,210	2,210,906	2,336,893
Denbigh	2,662,305	2,611,148	2,312,342	2,252,223
Flint	516,460	535,682	497,037	527,677
Glamorgan	34,151,309	32,133,288	30,865,426	31,058,120
Pembroke	57,754	46,600	46,350	63,376
Total	40,436,815	37,971,580	36,346,610	36,719,360

SCOTLAND

Argyll, Dumfries, Kinross, Peebles and Sutherland.	527,226	532,020	479,720	533,516
Ayr	3,907,108	4,004,065	3,573,638	3,713,337
Clackmannan	300,718	303,967	282,972	297,450
Dumbarton	420,425	401,585	384,157	380,167
Edinburgh	2,569,314	2,414,425	2,266,151	2,522,980
Fife	7,329,051	6,383,831	6,446,910	7,069,166
Haddington	969,274	873,164	824,489	967,241
Lanark	15,675,943	15,101,220	13,708,401	12,893,210
Linlithgow	1,661,191	1,578,467	1,461,688	1,488,965
Renfrew	138,600	135,672	85,829	77,367
Stirling	2,595,781	2,517,328	2,372,263	2,514,465
Total	36,094,631	34,245,744	31,890,218	32,457,864

IRELAND

Antrim .....	.....	658	2,004	.....
Cavan	150	.....	.....	.....
Kilkenny	55,844	61,742	63,270	59,673
Leitrim	962	2,200	3,176	1,749
Queen's	16,492	14,156	7,086	13,819
Roscommon	8,921	12,487	10,805	12,746
Sligo .....	.....	.....	1,278	.....
Tipperary	5,904	4,403	4,082	4,427
Tyrone	1,560	.....	300	.....
Total	89,833	95,646	92,001	92,414
Total gross tons	256,375,366	248,499,240	227,748,654	*229,743,128
Total net tons	287,140,409	278,319,149	255,078,492	*257,312,303

*The 1919 figures are preliminary and do not cover coal returns from quarries; in 1918 this tonnage amounted to 84,075 gross tons.

THE IRISH COAL INDUSTRY*

Ireland consumes annually about 4,500,000 tons of coal,† and 5,000,000 to 6,000,000 tons of peat, equivalent, say, to 2,500,000 tons of coal. Of the coal thus consumed in Ireland, she produces, at present, 92,000 tons annually. Her production reached high water mark in 1850, being then 150,000 tons. The annual output from the various Irish mines during 1918 is shown by the following table, which also shows the number of men employed in each mine, including workmen above the surface as well as below:

Name of mine	Annual output Tons	No. of employees	
		Under	Above
Arigna Mining Co. (County Roscommon)	7,434	65	24
Castlecumber Collieries, Ltd. (County Kilkenny)	63,675	364	162
Michael Layden (County Roscommon, County Leitrim) ..	6,367	35	6
New Irish Mining Co. (Queen's County)	7,086	60	33
Slieve Ardagh Collieries Co. (County Tipperary)	3,915	25	12
Various small mines	3,494	68	39
Total	92,001	617	276

All the localities in which coal is proved or reasonably presumed to exist in Ireland are well known. Further, with one very important exception (the Coalisland area), the amount of reserves in each area, the nature of the coal, and the thickness of the seams, are reasonably well known. The amount of reserves is shown by the following table:

Coal Resources of Ireland, including Seams of 1 ft. or over, to a depth of 4,000 ft.

	Actual reserves (calculation based on actual thickness and extent)		Probable reserves (Approximate estimate)	
	Area	Metric Tons	Area	Metric Tons
Ballycastle			4½ sq. miles	13,720,000
Tyrone—				
I.—Lower coal—Measure coals (Dungannon and Coalisland)			8 sq. miles	31,210,000
II.—Middle coal—Measure coal (Coalisland) ...			Unknown	See text— prob. large
III.—Annaghone			⅓ sq. miles	3,000,000
Lough Allen—				
I.—North Arigna area ... 140 acres		356,000		
South Arigna area ... 2.9 sq. miles		4,780,000		
II.—Slieve-an-Ierin area.. 3.1 sq. miles		3,060,000		
Leinster (Jarrow)		3,810,000		
Leinster (Skebana)	94 sq. miles	152,920,000		
Tipperary	10.3 sq. miles	15,080,000		
Totals		180,506,000		47,930,000

Of the proved Irish mine fields, the Leinster coal field is far the most important. It embraces an area of 94 square miles. The New Irish Mining Co's collieries are at the north end, the Castlecumber Co's collieries at the south. This area produces anthracite coal, which, as the Committee are satisfied on the evidence, is equal to the best British anthracite. The coal mines in the Arigna district are semi-bituminous in quality.

*Abstracted from a report issued by a government committee appointed to inquire into the position of and the conditions prevailing in the coal industry of Ireland. The committee was appointed by the Chief Secretary for Ireland, and its report was made public in April, 1920.—EDITOR.

The Coalisland area has great possibilities. The theory is that a vast trough extends from Fifehire, in Scotland, across the Channel to Lough Neagh, in Ireland, and that this trough, which contains coal measures of great value in Fifehire, Ayrshire, Lanarkshire, and the Lothians, probably contains coal measures of value in Ireland as well. By directions of the British Government, boring was started in December, 1918, at Washing Bay, on the shores of Lough Neagh, and carried on to September, 1919, when the boring was abandoned. While the spot for the boring was carefully selected, the boring met with clay to a depth of 1,196 feet, and was continued to 1,766 feet in depth without reaching the carboniferous strata.

Turning to the rest of Ireland, the real difficulty is not the amount of reserves but the thickness of the seams to be worked upon. The seams in Irish mines are mostly thin, those in the Leinster area being 20 inches in thickness or thereabouts on an average. This accounts to a large extent for the circumstance that the annual output per underground worker in Ireland is only 149 tons, while in Great Britain it is 294 tons. The improved railway facilities recently provided in respect of Irish collieries, the high wages in Great Britain, the increased cost of carriage by sea, and the use of coal cutting machinery, however, make it possible for the Irish mine owner to compete on better terms in the future than he has in the past. Most of the Irish coal produced at present is anthracite, and the evidence goes to show that it is equal to the best British anthracite.

During the war, and presumably by reason of the exigencies thereof, three railways were built—one of 10 miles from Dunmore (near Kilkenny) to the Castlecomer Collieries; one of 10 miles from Athy to Wolfhill (New Irish Mining Co's collieries); and one from Arigna to the Arigna mines, to serve the Arigna district. What has been done in respect of the Leinster coal field seems to be reasonably sufficient, for a considerable time at least. But the transport in respect of Arigna needs much improvement. The Lough Allen Canal is a fine waterway, extending from the Arigna district to the Shannon at Battle Bridge, and serving a district 140 miles in length; but it is spoiled by the fact that some of the locks are quite inadequate to take craft of reasonable size. A proper transport system would require (1) an aerial railway, (2) a broad gauge railway, and (3) the widening of the locks of the canal to enable a load of 150 tons at least to be brought by water.

The problem of housing accommodation in connection with the mines is one that requires serious and immediate consideration. As things stand, many of the miners' cottages are situate considerable distances (in some instances four to five miles) from the pit's mouth, which fact involves, of course, much loss of valuable time and energy. Further, if the existing mines are to be developed, many additional houses are required.

With reasonable transport and housing facilities, the committee think the industry should show considerable growth. Their estimate of its probable increase under these circumstances is that the output and labor employed could be quintupled; in other words, that the output should reach about 500,000 tons, and that the industry should employ about 4,000 hands. Apart from the possibilities of the Coalisland region, and the development of existing mines, it is difficult to say whether an influx of much additional capital in Irish coal mining is to be expected, because the thinness of the seams prevents such big possibilities as are usually required to tempt capital into an industry which, to some extent, is in the nature of a gamble.

In Ireland, the working of minerals to the national advantage is frequently at the mercy of a small holder who, under the land purchase system, has become the owner in fee of his farm, and of the minerals thereunder. Several instances

have been brought to the knowledge of the committee, says the report, of the action of owners of land who have apparently no notion of working the minerals themselves, but who nevertheless have obstructed and prevented their working by persons anxious and able to do so.

There are three State Departments in Ireland which have to do with mines and minerals. So far as ownership is concerned, the undeveloped minerals of Ireland may be classified as follows: (1) Those in the possession of the Land Commission by virtue of section 13 (3) of the Irish Land Act, 1903, i.e., the minerals under lands sold since the passing of that Act, and which undoubtedly constitute a majority of the purchased holdings of the country. (2) Those vested in tenant proprietors by virtue of the Ashbourne and other Acts of the Land Code prior in date to the year 1903. (3) Those belonging to the landlords whose estates have been agreed to be sold to the occupiers since the Land Act, 1903, but the sales of which still remain incomplete. In the bulk, if not all, of these cases, the minerals will pass automatically to the Land Commission as soon as the vesting orders are made. (4) Those belonging to landlords who have not yet agreed to sell to their tenants under the Land Code, and those reserved by landlords out of sales made to tenants under the Ashbourne and other early Land Purchase Acts. (5) Those belonging to individuals who are both owners and occupiers of the surface.

†Reporting under date of January 30, 1920, as to Irish coal needs, United States Consul Dumont, stationed at Dublin, after estimating the 1919 output at 95,000 tons, said:

"Irish needs in the way of imported coal are estimated to be in the neighborhood of 5,000,000 tons a year. That this estimate is about correct is shown by the figures of imports for 1914 and 1915, which were officially reported at 4,470,833 and 4,573,627 tons, respectively. Official figures show that Belfast imported 1,321,434 tons in 1917 and 1,368,248 tons in 1918. Dublin imported 1,146,916 tons in 1916 and 1,217,516 tons in 1917. Outside of these two ports, Londonderry, Queenstown, Waterford, and Dundalk import considerable quantities, while Drogheda, Sligo, Galway, and Limerick are of minor importance in the trade.

"The consumption of coal in Ireland is distributed as follows: Domestic use, 2,115,000 to 2,615,000 tons; industrial works, 1,400,000 tons; railways, 460,000 tons; gas works, 400,000 tons; miscellaneous, 125,000 tons. The item "Miscellaneous" includes electric-light plants. No coke is imported, but coke from gas plants is sold in the big cities. Peat is in use everywhere throughout the country districts. All of the coal imported is from Great Britain and is carried in English bottoms. Most of the steamers engaged in the trade are of small tonnage and carry no other cargo. Both Belfast and Dublin quays are equipped with electric and hydraulic cranes ample in capacity to unload 150 tons per hour from each ship into railway cars alongside. Dublin has 12 electric cranes in operation, each of 50 tons per hour capacity, ranged three to each ship of any size, besides eight hydraulic cranes."

PRODUCTION OF COKE AND BRIQUETS IN THE UNITED KINGDOM IN 1918

The output of coke in 1918 is returned at 21,066,366 tons, valued at £35,413,547, as compared with 21,995,125 tons, valued at £30,680,447 in 1917. The quantity of coal consumed in the manufacture of coke in 1918 was 38,219,479 tons, as against 39,300,504 tons in the previous year. Of the total coke produced in 1918 the amount obtained at gasworks was 7,945,055 tons, and at coke ovens 13,121,311 tons, the corresponding figures for 1917 being 8,440,074 and 13,555,051 tons respectively. In the principal coal fields the coke output and coal used in its manufacture were as follows:

County	Coal used			Coke obtained		
	1916 Tons	1917 Tons	1918 Tons	1916 Tons	1917 Tons	1918 Tons
Durham	8,178,606	8,448,567	8,126,524	5,465,664	5,581,514	5,372,911
Yorkshire	6,872,025	7,195,948	6,804,988	4,105,224	4,281,759	4,104,320
Lancashire	2,999,440	3,073,495	3,084,989	1,632,190	1,594,706	1,612,611
Glamorgan, etc.*	1,449,272	1,455,871	1,373,563	887,104	891,140	811,175
Monmouthshire .	1,648,932	1,402,998	1,637,808	1,002,713	943,546	997,197
Staffordshire ...	1,421,401	1,450,515	1,323,983	841,770	855,612	821,223

	Coal used—			Coke obtained—		
	1916 Tons	1917 Tons	1918 Tons	1916 Tons	1917 Tons	1918 Tons
Derbyshire	1,247,648	1,222,886	1,179,212	724,296	715,904	691,715
Lanark	1,229,562	1,301,550	1,261,816	606,768	617,688	638,217
Stirling	562,513	554,269	537,318	380,772	376,793	363,611
Warwickshire ..	923,885	1,030,397	925,983	489,785	420,030	456,842
Cumberland	868,512	952,480	803,987	524,947	570,232	505,848

*Including coke-oven coke made in the county of Denbigh.

The subjoined table shows the numbers of the various types of coke ovens in operation in the United Kingdom. The corresponding figures for 1917 were given in the 1919 COAL TRADE, page 221:

Type of oven	England	Wales	Scotland	Total 1918	Total 1917
Beehive	5,864	200	551	6,615	7,013
Coppée	597	785	...	1,382	1,415
Simon-Carves	1,841	...	...	1,841	1,756
Otto Hilgenstock	2,044	82	110	2,236	2,217
Semet-Solvay	1,125	66	210	1,401	1,357
Koppers	1,319	50	...	1,369	1,361
Simplex	518	...	...	518	486
Huessener	439	...	...	439	439
Collins	171	...	...	171	171
Other types	251	...	69	320	365

BRIQUETS

The following table shows the quantity and value of the briquets produced and the amount of coal used in their manufacture at works in the United Kingdom during 1918, with the comparative totals for 1917:

	Coal used Tons	Briquets produced	
		Quantity Tons	Value* £
England	127,516	143,844	231,148
Wales	1,518,789	1,613,287	2,592,510
Scotland	84,870	93,876	153,343
Ireland	4,320	4,682	13,549
Total (United Kingdom) for 1918 ..	1,735,495	1,855,689	2,990,550
Total for 1917	1,681,253	1,746,048	2,472,701

*This value represents selling price at place of manufacture.

†This coal comprises 1,664,224 tons of steam coal, 70,234 tons of household coal and 1,087 tons of coking coal.

DESTINATIONS OF BRITISH COAL EXPORTS

Exports of fuel (gross tons) from Great Britain and bunker tonnage supplied during 1919, and four years previous, were:

Country	1916	1917	1918	1919
Russia	42,559	4,804	1,075,005	128,114
Sweden	2,659,905	1,646,502	613,573	1,051,121
Norway	2,643,187	2,307,753	1,059,227	1,250,867
Denmark	3,130,642	2,305,409	856,037	1,045,701
Netherlands	1,792,951	1,346,129	376,819	88,001
Belgium .....	...	...	...	4,246
France	17,001,361	17,311,877	17,512,545	16,511,005
Portugal	1,022,755	794,315	248,056	147,388
Azores and Madeira....	†	92,657	126,895	46,712
Spain	1,597,083	2,007,899	773,030	429,003
Canary Islands	470,680	399,865	38,641	...

County	1915	1916	1917	1918	1919
Italy	5,788,460	5,710,098	4,140,960	4,053,570	4,641,046
Greece	309,198	168,106	18,540	41,328	139,315
Turkey*	10,324	5,987	.....	.....	.....
Algeria	939,846	721,803	616,053	160,340	523,091
French West Africa .....	.....	.....	535,889	507,374	263,636
Portuguese West Africa	210,652	216,691	71,987	11,433	270,037
Chile	46,407	24,194	13,154	9,000	7,294
Brazil	498,340	196,973	237,516	169,982	189,205
Uruguay	332,541	179,472	199,692	162,417	184,813
Argentine Republic	1,618,603	728,412	309,216	258,110	639,089
Channel Islands	131,110	115,819	100,502	93,516	114,647
Gibraltar	356,075	517,135	1,224,340	1,615,985	1,465,736
Malta	151,153	84,784	1,729,685	1,195,883	733,045
Egypt	1,388,914	844,398	1,574,251	1,697,908	1,675,163
Anglo-Egyptian Sudan	**	49,288	18,650	403	23,186
Aden and Dependencies	132,475	29,935	22,925	.....	49,749
British India	24,536	11,400	7,166	1,350	354
Ceylon	43,487	25,726	12,541	.....	13,305
Other countries	591,226	510,109	1,482,892	1,072,147	937,840
Total anthracite	2,227,231	1,999,503	1,384,086	1,162,000	1,606,126
" steam	31,150,530	27,889,532	28,322,222	26,050,195	28,673,382
" gas	7,274,649	6,469,402	3,700,161	3,080,960	3,342,019
" household	1,041,079	377,245	152,399	148,834	143,877
Other classes	1,841,071	1,615,871	1,436,919	1,310,825	1,484,164
Total	43,534,560	38,351,553	34,995,787	31,752,904	35,249,568
Coke	1,010,713	1,481,498	1,278,646	915,921	1,508,010
Patent fuel	1,225,071	1,324,695	1,526,272	1,505,090	1,708,015
Bunkers, foreign	13,630,964	12,988,172	10,227,952	8,756,476	12,021,242
Total fuel, all kinds	45,770,344	41,157,746	37,800,705	34,173,915	38,465,593

*The figures for 1916 relate to ports or places in territory formerly Turkish, but occupied by other powers.

†Included with Portugal.

**Included with Egypt.

SHIPMENTS FROM BRISTOL CHANNEL PORTS

Foreign cargo coal shipments from the principal Bristol Channel ports during the past two years were as follows:

	Cardiff		Newport		Swansea		Port Talbot	
	1919	1918	1919	1918	1919	1918	1919	1918
	Gross tons	Gross tons	Gross tons	Gross tons	Gross tons	Gross tons	Gross tons	Gross tons
January	881,810	970,243	285,345	233,802	292,341	147,072	116,533	74,672
February	868,402	827,192	423,133	232,006	152,886	170,369	149,801	65,262
March	1,736,662	906,046	366,899	307,139	222,690	166,621	98,582	57,515
April	925,936	815,948	344,408	283,862	119,143	131,357	101,670	75,574
May	1,562,394	896,406	359,569	266,766	245,846	196,175	120,787	67,802
June	1,107,794	945,263	342,780	180,377	175,035	208,964	154,229	43,148
July	992,348	663,346	316,824	286,152	159,205	243,419	173,158	117,319
August	709,716	1,239,850	235,277	261,579	196,647	210,018	129,678	70,518
September	927,902	857,372	263,158	219,638	198,345	139,920	116,605	121,285
October	930,572	1,037,990	236,829	345,034	158,364	188,330	162,868	93,402
November	1,008,965	767,323	245,458	235,098	160,714	169,325	121,291	98,384
December	903,180	806,845	245,427	272,804	188,766	131,481	134,637	77,260

WAR HALTS GROWTH OF BRITISH EXPORT TRADE

Up until the beginning of the European War, British coal exports had shown marked increases, the 1913 figures reaching 76,687,241 gross tons.

Since that time there has been a progressive decline, with 1919 shipments only 799,935 tons greater than in 1900, and the promise that 1920 totals will throw the trade back statistically 25 years. How the trade had grown during the seven decades prior to the war interference is shown in the following table:

Countries	1848	1890	1900	1910	1918	1919
France	515,975	5,093,329	8,314,697	9,588,892	16,511,005	16,204,596
Germany	170,038	3,350,512	5,938,178	10,005,515	.....	.....
Russia	83,582	1,493,189	3,116,099	3,224,344	128,114	221,490
Sweden	37,995	.....	2,968,579	3,991,207	1,051,121	1,592,324
Norway	18,800	2,313,817	1,342,759	1,982,599	1,250,867	1,330,646
Denmark	145,286	1,325,585	2,056,990	2,712,681	1,045,701	1,742,711
Belgium	3,882	.....	1,152,109	1,559,309	4,246	143,769
Holland	184,434	527,460	1,812,257	2,243,658	88,001	401,001
Spain	53,548	1,905,618	1,695,820	2,876,276	429,003	805,740
Italy	46,927	3,910,847	5,115,125	8,784,504	4,053,570	4,641,046
Portugal	33,066	627,529	569,901	1,136,496	147,388	544,302
Turkey, etc...	40,231	419,787	367,121	1,013,218	.....	.....

Totals ... *1,329,764 *20,994,673 *34,449,635 *64,520,320 *31,752,904 *35,249,568

*Includes exports to countries other than those named. More detailed figures for the past five years are shown on the preceding page under the caption of "Destinations of British Coal Exports."

CARDIFF PRICES IN 1919

Coal prices in the United Kingdom continued under government control throughout 1919, although, beginning with June 2, some relaxation was permitted. The base prices were established in the order of October 26, 1918, which named fixed prices for the Allied countries and minimum prices at which coal might be sold to neutral nations. On May 16, 1919, another order became effective which continued fixed prices for the Allies and the old minima for Spain and South America, but advanced the minima for other neutrals. On July 16, 1919, when the seven-hour day went into effect an advance of six shillings per ton was made effective on all grades and prices to the Allies became minimum instead of maximum figures. Under the operation of these various orders, where the current market price was less than the minimum, then the minimum was to be applied, but when higher, then the current market price controlled. As a matter of fact, the price to neutrals was never below the minimum. During the first five months of 1919, before the maximum (or fixed) prices to the Allies became the minimum, neutrals frequently paid 10 to 20 shillings premium over the minimum figures. In December of last year, a concession of 10 shillings on coal used for domestic purposes within the United Kingdom was authorized.

The variations in prices f. o. b. Cardiff during the year are shown in the table following:

	Best large steams	Best seconds	Bunker smalls	Cargo smalls	Best Mon-mouth-shire	Best drys	No. 2 Rhondda best
Order of Oct. 26, 1918—	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Fixed for Allies ...	40 0	38 6	28 6	27 6	37 0	37 0	34 0
Min'm for Neutrals	50 0	47 6	28 6	27 6	45 0	45 0	41 0
Order of May 16, 1919—							
Fixed for Allies ...	40 0	38 6	28 6	27 6	37 0	37 0	34 0
Min. for Spain and South America ..	50 0	47 6	28 6	27 6	45 0	45 0	41 0
Min. other Neutrals	75 0	72 6	45 0	44 0	70 0	70 0	66 0

	Best large steams	Best	Bunker smalls	Cargo smalls	Best Mon- mouth- shire	Best drys	No. 2 Rhondda best
Order of July 18, 1919—							
Min. Sched. A (Allies)	46 0	44 6	34 6	33 6	43 0	43 0	40 0
“ “ B (Spain and So. Amer.)	56 0	53 6	34 6	33 6	51 0	51 0	47 0
Min. other Neutrals.	81 0	78 6	51 0	50 0	76 0	76 0	72 0
Current market prices—							
June 2.....	52 6	51 0	40 0	37 6	50 0	50 0	45 0
“ 9.....	52 6	51 0	40 0	37 6	50 0	50 0	45 0
“ 16.....	55 0	52 6	42 6	40 0	52 6	55 0	47 6
“ 23.....	60 0	57 6	45 0	42 6	57 6	60 0	50 0
“ 30.....	60 0	57 6	45 0	42 6	57 6	60 0	50 0
July 7.....	60 0	57 6	47 6	45 0	57 6	60 0	50 0
“ 14.....	60 0	57 6	47 6	45 0	57 6	60 0	50 0
“ 21.....	60 0	57 6	47 6	45 0	57 6	60 0	50 0
“ 28.....	70 0	67 6	57 6	55 0	67 6	70 0	60 0
Aug. 4.....	70 0	67 6	57 6	55 0	67 6	70 0	60 0
“ 11.....	75 0	70 0	65 0	60 0	72 6	75 0	70 0
“ 18.....	85 0	82 6	70 0	65 0	82 6	85 0	75 0
“ 25.....	85 0	82 6	70 0	65 0	82 6	85 0	75 0
Sept. 1.....	90 0	85 0	65 0	60 0	87 6	87 6	77 6
“ 8.....	85 0	77 6	62 6	55 0	82 6	85 0	72 6
“ 15.....	85 0	77 6	62 6	55 0	82 6	85 0	72 6
“ 22.....	85 0	82 6	65 0	55 0	85 0	82 6	70 0
“ 29.....							
Oct. 6.....	87 6	82 6	65 0	55 0	85 0	85 0	70 0
“ 13.....	82 6	77 6	62 6	55 0	82 6	80 0	70 0
“ 20.....	77 6	72 6	57 6	52 6	77 6	77 6	65 0
“ 27.....	75 0	70 0	55 0	50 0	72 6	77 6	65 0
Nov. 3.....	72 6	67 6	52 6	45 0	70 0	75 0	65 0
“ 10.....	72 6	67 6	52 6	45 0	70 0	75 0	65 0
“ 17.....	72 6	67 6	52 6	45 0	70 0	72 6	65 0
“ 24.....	75 0	70 0	55 0	52 6	72 6	75 0	67 6
Dec. 1.....	85 0	80 0	65 0	60 0	82 6	85 0	70 0
“ 8.....	92 6	85 0	72 6	65 0	87 6	90 0	75 0
“ 15.....	97 6	92 6	72 6	65 0	92 6	95 0	80 0
“ 24.....	110 0	105 0	85 0	75 0	105 0	107 6	90 0

Railway Strike. — Market suspended.

COAL FREIGHT RATES FROM CARDIFF, WALES

The range of vessel coal freights in shillings and pence from Cardiff, Wales, to South American, Mediterranean and Bay Ports during the past coal year was as follows:

To	April, 1919	May	June	July
Alexandria	47 6	....	47 6	47 6
Algiers	39 0	39 0	....	....
Alicante	77 6 @ 80 0	77 6 @ 80 0	....	....
Barcelona	80 0 @ 82 6	80 0 @ 82 6	80 0	52 6 @ 60 0
Bayonne	30 0 @ 34 9	30 0 @ 34 9	30 0 @ 34 9	30 0 @ 34 9
Bilbao	42 6 @ 62 6	61 3 @ 62 6	60 0 @ 61 3	....
Bordeaux	25 6 @ 55 6	22 9 @ 54 0	25 6	25 6 @ 54 0
Cadiz	73 0 @ 75 0	75 0	40 0
Carthagea	80 0	85 0	70 0

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	April, 1919	May	June	July
Corunna	70 0 @ 72 6
Genoa	47 6	45 6 @ 47 6	47 6	47 6
Gibraltar	37 6	37 6	17 6 @ 37 6
Huelva	60 0 @ 70 0	47 6 @ 65 0	60 0 @ 70 0	42 6 @ 45 0
Las Palmas	35 0 @ 35 6	35 0	35 0 @ 40 0	32 6 @ 35 0
Lisbon	37 6	37 6	37 6	37 6 @ 50 0
L'Orient .....	.....	45 0 @ 46 6	45 0	45 0
Malaga	77 6 @ 80 0	80 0	.....	.....
Malta	40 0	22 6	22 6	22 6
Marseilles .....	.....	.....	.....	46 6
Montevideo .....	.....	47 6	48 9	40 0 @ 48 9
Nantes	22 6 @ 46 6	46 6	24 0 @ 46 6	46 6
Naples	45 6	45 6	45 6	45 6
Oran	38 0	38 0	38 0	.....
Porto Ferraio	50 6	.....	.....	.....
Port Said	22 6 @ 23 6	47 6	47 6	47 6
River Plate	45 0	45 0 @ 50 0	51 3	40 0 @ 51 0
Rochefort .....	.....	.....	.....	20 6
Santander	60 0	61 0	.....	.....
Santos .....	.....	57 6	.....	.....
Seville .....	.....	75 0	70 0 @ 75 0	.....
St. Nazaire	20 6 @ 46 6	20 6 @ 46 6	20 6 @ 46 6	20 6 @ 46 6
St. Vincent	35 0 @ 40 0	40 0	40 0	40 0
Tarragona	80 0	.....	.....	.....
Torre Annunziata	46 6	.....	.....	.....
Valencia	77 6 @ 80 0	77 6 @ 80 0	.....	.....
Vigo .....	.....	70 0 @ 75 0	65 0	47 6
To	August	September	October	November
Alexandria	47 6	42 6 @ 47 6	60 0	72 6
Algiers .....	.....	45 0	50 0	70 0
Alicante .....	.....	.....	68 9	.....
Almeria .....	.....	60 0	70 6	.....
Barcelona	57 6	52 6 @ 70 0	67 0 @ 70 0	67 6 @ 75 0
Bayonne	30 0	30 0	.....	.....
Bilbao	45 0	45 0	55 0 @ 60 0	55 0 @ 62 6
Bordeaux	25 0 @ 54 0	54 0	50 0 @ 54 0	51 3 @ 62 6
Buenos Aires .....	.....	40 0	42 0	50 0
Cadiz	47 6	.....	.....	55 0 @ 65 3
Carthagena .....	.....	.....	62 6	67 6
Genoa	47 6 @ 48 0	51 0 @ 52 6	52 6 @ 82 6	75 0 @ 85 0
Huelva	40 0	40 0	55 0	.....
Las Palmas	35 0	.....	42 6 @ 47 6	47 6 @ 52 6
Lisbon	40 6 @ 59 6	50 0 @ 55 0	50 0 @ 57 6	57 6 @ 65 0
L'Orient	26 0 @ 45 0	45 0	45 0	.....
Malaga	52 6	65 0	65 0 @ 75 0	67 6 @ 70 0
Malta	22 6	42 6	60 0	75 0
Marseilles	46 6	.....	62 6 @ 82 6	71 3 @ 83 0
Montevideo	40 0	.....	.....	45 0
Nantes	35 6 @ 46 6	45 0 @ 46 6	47 0 @ 49 6	46 6 @ 60 0
Naples	45 6	65 0 @ 87 6	82 6
Oran	45 0 @ 65 0	65 0
Port Said	47 6	47 6 @ 50 0	52 6 @ 65 0	70 0 @ 75 0

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	August	September	October	November
River Plate	40 0	40 0	40 0 @ 51 3	45 0 @ 50 0
Rochefort	47 6
Santander	42 6	....	....	....
St. Nazaire	20 6 @ 52 6	....	46 6 @ 47 6	46 6 @ 60 0
St. Vincent	37 6	37 6	42 6 @ 47 6	48 9 @ 52 6
Valencia .....	....	62 6	67 6	....
Vigo	47 6	....	....	62 6
To	December	January, 1920	February	March
Alexandria .....	....	75 0	72 6 @ 80 0	77 6 @ 82 6
Algiers .....	....	50 0	50 0 @ 52 6	47 6 @ 65 0
Barcelona .....	....	60 0	63 9 @ 67 6	....
Bayonne .....	....	....	65 0	55 0
Bilbao	60 0	55 0	52 6	....
Bordeaux	52 6 @ 60 0	50 0 @ 60 0	55 0 @ 60 0	42 0 @ 45 0
Buenos Aires	40 0	37 6	....	....
Cadiz	65 0	55 0	....	....
Genoa	67 6 @ 80 0	60 0 @ 65 0	65 0 @ 75 0	65 0 @ 72 6
Gibraltar	45 0 @ 52 6	40 0 @ 45 0	45 0 @ 52 6	35 0 @ 52 6
Huelva	60 0	55 0	52 6	....
Las Palmas	42 6	37 6	38 9	37 6 @ 38 9
Lisbon	45 0 @ 62 6	42 6	45 0 @ 50 6	45 0
L'Orient .....	....	55 0	....	52 6
Malaga .....	....	85 0	52 0 @ 65 0	....
Malta	62 6	....	....	47 6 @ 65 0
Marseilles	62 6 @ 75 0	57 6 @ 60 0	62 6 @ 70 0	70 0
Montevideo	40 0	40 0	37 6	....
Nantes	46 6 @ 60 0	51 6	55 0 @ 57 6	....
Naples	67 6 @ 80 0	62 6 @ 67 6	72 6	....
Oran .....	....	53 6 @ 54 0	55 0 @ 60 0	42 6 @ 45 0
Port Said	60 0 @ 70 0	60 0 @ 65 0	70 0 @ 80 0	75 0 @ 80 0
River Plate	45 0 @ 50 0	37 6 @ 40 0	37 6 @ 38 0	38 0 @ 38 9
Santos .....	....	40 0	....	....
St. Nazaire	46 6	45 0 @ 55 0	50 0 @ 55 0	50 0
St. Vincent	40 0	37 6 @ 40 0	40 0	40 0
Valencia	70 0	65 0	....	....
Vigo	62 6	....	....	50 0

Where a port shown under one section does not appear on another it indicates that no rates are quoted to that port during the period covered by the section from which it is omitted.

FRENCH IMPORTS AND EXPORTS OF COAL AND COKE

Imports of coal, coke and briquets into France during the past three years are shown in the table following:

	1917 Tons	1918 Tons	1919 Tons
Coal:—			
Great Britain	15,810,647	15,367,374	14,296,799
Belgium	16	5	1,736,720
United States	57,439	17,656	342,284
Other countries	2,380	1,345	2,828,118
Total	15,870,482	15,386,380	19,203,921

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	1917 Tons	1918 Tons	1919 Tons
Coke :—			
Belgium	31	2	68,174
Great Britain	662,661	512,408	617,049
Other countries	8,416	4,719	1,013,982
Total	671,108	517,129	1,699,205
Briquettes :—			
Great Britain	753,772	830,721	702,237
Belgium .....	.....	.....	282,035
Other countries	6	2	185,918
Total	753,778	830,723	1,170,190
Exports for the same period were as follows:			
Coal :—			
Belgium	44,380	257	355
Switzerland	12,919	62,824	218,937
Spain	38	1,983	732
Italy	9,000	1,613,482	84,822
Other countries	54,668	114,688	133,721
Bunkers :—			
French ships	59,389	25,213	43,623
Foreign "	27,017	11,708	34,604
Total	207,411	1,830,155	516,794
Coke :—			
Switzerland	17,502	29,435	48,440
Italy .....	.....	1,101	2,858
Other countries	5,856	5,773	3,824
Total	23,358	36,309	55,122
Briquettes :—			
Switzerland	93	41	2,144
Other countries	13,032	46,732	16,419
Bunkers :—			
French ships	29,886	24,174	26,838
Foreign "	434	2,054	2,630
Total	43,445	73,001	48,031

The fuel consumption of French and foreign shipping was as follows:

Year	French ships		Foreign ships	
	Coal Tons	Briquettes Tons	Coal Tons	Briquettes Tons
1917	1,001,544	72,198	133,904	2,196
1918	511,883	58,348	214,397	4,579
1919	729,186	56,965	173,193	5,773

At the end of 1919, stocks of coal at the various French ports amounted to 731,798 tons, as compared with 691,467 tons at the end of 1918, and 384,313 tons at the end of 1917. Of the total in stock at the end of last year, 237,363 tons were accumulated at Bordeaux, 111,519 tons at Marseilles, and 90,818 tons at Havre.

FRENCH COAL PRODUCTION: 1917-1919

Coal production in France in 1919 approximated 21,853,453 metric tons. Estimated monthly production was as follows: January, 2,472,528, February, 2,244,464, March, 2,125,414, April, 1,744,594, May, 1,733,426, June, 857,600, July, 1,430,367, August, 1,781,760, September, 1,838,398, October, 2,064,902, November 1,820,000 and December, 1,750,000 tons.

According to statistics furnished by the Comité Central des Houillères de France, the output of coal from the mines in France during 1918 amounted to 26,322,000 metric tons of 2,204.6 pounds each, as compared with 28,924,891 metric tons in 1917, 21,477,759 metric tons in 1916, and 19,908,811 metric tons in 1915. The normal production of French coal is about 40,000,000 metric tons. The output of coal in each of the principal basins in 1917 and 1918 was as follows:

Basins	1917	1918
	Metric tons	Metric tons
Pas-de-Calais	11,450,463	7,931,430
Loire	4,580,636	4,918,116
Saone-et-Loire	3,252,493	3,288,148
Southeast	522,674	616,080
Southwest	2,566,233	2,591,460
West	191,037	198,485
Gard	2,784,605	2,952,782
Herault	290,195	331,462
Allier	526,777	519,409
Nievre	201,669	214,894
Haute-Loire	183,555	189,798
Other	2,374,554	2,566,936
Total	28,924,891	26,322,000

Detailed figures covering 1919 operations were not available at the time this edition of THE COAL TRADE went to press. Some idea of comparative operations in 1918 and 1919, however, may be gained from the following statistics covering the output at the principal collieries during the two years named.

Pas-de-Calais:—	1918	1919	Montrambert et la Béraudière	1918	1919
	Tons	Tons		Tons	Tons
Béthune	904,000	502,439	Mines de la Loire....	618,100	942,300
Nœux	1,436,766	1,567,869	Mines de la Porchère	694,223	1,069,568
Bruay	2,626,170	2,866,496	Houillères de Saint-Etienne	9,563	8,711
Marles	1,824,839	2,277,638	Janon-Terrenoire	648,770	919,337
Ferfay-Cauchy	241,573	288,923	Mines du Cros.....	41,315	67,609
Ligny-lez-Aire	169,150	236,000	Villebœuf	98,050	63,744
La Clarence	78,456	114,148	La Chazotte.....	103,124	119,002
Vendin-les-Béthune ..	46,895	83,400	Monthieux	103,536	242,757
Total	7,327,889	7,926,903	Saint-Chamond	74,633	23,981
Nord:—			Péronnière	59,190	49,580
Anzin	365,121	905,158	Haute-Cappe	83,303	123,730
Aniche	113,915	313,142	Total, all collieries (coal) ..	46,429	62,100
Douchy	22,606	104,156	Total		
Vicoigne	1,891	25,270	(anthracite) ..	5,371	8,780
Crespin	15,395	25,165	Loire (Briquettes):—		
Azincourt	1,468	31,782	Roche-la-Molière et Firminy	27,886	21,159
Thivencelles	32,240	51,136	Mines de la Loire...	9,925	14,181
Escarpelle	—	197,673	Saint-Etienne	58,520	73,860
Flines-les-Raches ..	—	17,189	Villebœuf	39,553	36,533
Total	552,626	1,670,731			
Loire (coal):—					
Roche-la-Molière et Firminy	765,015	1,190,146			

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	1918 Tons	1919 Tons
La Chazotte.....	66,185	106,238
La Péronnière.....	58,063	36,330
Total (briquettes) ..	259,772	293,301
Loire (coke):—		
Roche-la-Molière et Firminy	25,596	33,071
Mines de la Loire.....	95,294	92,281
Saint-Etienne	127,490	160,520
Montrambert et la Béraudière	1,184	1,362
Total	249,564	287,234
Rhone:—		
Société des Char- bonnages des Bouches-du-Rhône .	341,439	580,401
Sociétés des Mines de Valdonne.....	189,549	304,213
Grand'Combe (Trets)	103,785	142,876
Coudoux	13,569	9,556
Total	653,387	996,886
Centre zur—Allies:—		
Commentry	27,790	39,812
Les Ferrières.....	70,400	97,800
Montvicq	7,860	12,385
Bézenet et L'Ouche..	30,695	44,832
Doyet	7,603	13,253
Saint-Hilaire	49,901	70,242
Buxières		
La Courolle	58,423	71,884
Les Flammores.....	24,434	30,350
Deneuille	8,257	10,325
Bert	46,891	62,125
Fins-Noyant	50,600	66,200
Total	373,854	519,208
Nièvre:—		
Decize	130,147	215,051
Puy-de-Dôme:—		
Saint-Eloy	171,100	271,500
La Boule	164,700	224,000
Messeix	82,585	123,340
La Combelle	89,655	128,186
Charbonnier	26,780	32,230
Total	540,068	784,417
Haute-Loire:—		
Houillères de la Haute-Loire	121,640	148,204
Médocoste	12,907	18,368
Marsanges	16,316	23,226
Total	156,018	196,792

	1918 Tons	1919 Tons
Cantal:—		
Champagnac	91,700	152,188
Champleix	5,854	14,935
Total	97,554	167,123
Laveissière (lignites).	1,929	247
Gard (coal):—		
Grand Combe.....	635,769	278,338
Bessèges	461,636	785,896
Rochebelle	259,785	361,872
Trèlys et Palmesalade	123,206	230,172
Portes et Sénéchas...	70,999	101,400
Lalle	5,399	7,025
Gagnières	66,631	107,110
Cessous	49,054	68,074
Nord d'Alais.....	36,950	44,980
Total	1,709,419	2,935,537
Hérault (coal):—		
Graissessac	211,018	312,390
Houillères de Plaissance	16,544	21,651
Total	227,562	334,041
Gard (briquettes):—		
Grand Combe.....	305,493	465,455
Bessèges	129,827	185,671
Rochebelle	128,831	159,483
Trèlys et Palmesalade	89,930	129,880
Portes et Sénéchas..	16,383	19,583
Gagnières	21,637	29,497
Nord d'Alais.....	21,365	29,621
Total	723,466	1,019,190
Hérault (briquettes):—		
Graissessac	61,834	86,807
Plaissance	2,578	3,268
Total	61,412	90,075
Gard (coke):—		
Bessèges	14,876	26,644
Aubin:—		
Decazeville	386,504	580,890
Acéries de France...	257,399	355,936
Campagnac	109,027	189,261
Bouquies	42,050	66,100
La Planquette et Auzits	24,665	34,408
Total	819,645	1,226,595
Rodez:—		
Charbonnages de Rodez	3,784	21,708
Carmaux:—		
Mines de Carmaux...	576,640	845,110
Mines d'Albi.....	201,593	477,594
Total	868,233	1,322,704

THE BELGIAN COAL INDUSTRY

Belgium has two producing coal fields. The most important is known as the Sambre-Meuse. and is divided into five main areas, viz., the Borinage, Centre, Charleroi, Namur and Liège. The Borinage area, west of Mons, produces all varieties, but its principal tonnage is bituminous running between 28 and 35 per cent. volatile and, in the case of *lenu* or long-flame gas coals, up to 37 and 40 per cent. In the Centre area, east of Mons, is found bituminous averaging 22 per cent. volatile and semi-bituminous; Centre

coals are used for open domestic grates and for making metallurgical coke. Semi-bituminous and dry coal (anthracite type), containing about 11 per cent. volatile, suitable for lime kilns, domestic purposes and briquets are mined in the Charleroi area. Dry coal (anthracite type) is found in the Namur and Liège areas.

The Campine field, in the Antwerp and Limburg provinces, is still largely in the development stage. Discovered in 1902, exploitation has been slow because of the great depth at which the coal is found and the watery nature of the overburden. Inasmuch as the Campine produces both bituminous and long-flame coals, it is expected to prove of considerable value. Ten concessions, covering about 395,199 hectares, have been let, and it is estimated that each concession will be producing 1,000 tons daily in four or five years; one is already up to 500 tons daily. An annual output of 20,000,000 tons is expected from this field. This would mean an increase of nearly 100 per cent. in the output for the country.

The production in 1913 in the Sambre-Meuse was 22,841,590 tons, divided as follows: Borinage, 4,406,550 tons; Centre, 3,458,640; Charleroi, 8,148,020; Namur, 829,900, and Liège, 5,998,480 tons. During the period of German occupation production varied from 16,714,050 tons in 1915 to 13,764,630 tons in 1918. The German authorities shut down the mines late in October, 1918, but production was recommenced shortly after the armistice a month later and by December, Centre production was up to 70,000 tons per month and Borinage to 33,000 tons. The total production in January, 1919, reached 1,232,839 tons. Strikes, transportation difficulties, reduction in hours and shortage of men embarrassed progress but by June, 1919, the output was on a basis of 1,456,240 tons per month; in October it was up to 1,884,740 tons.

A study of the situation made by the British commercial secretary at Brussels showed that in January, 1919, the consumption of coal in Belgium (including coal consumed at the collieries, about 187,000 tons per week) amounted to 1,152,930 tons (or 50 per cent. of the consumption in 1913 for the corresponding month), and some 90,000 tons less than the production. In September the consumption had increased to 1,519,725 tons (or 75 per cent. of the 1913 consumption), against a production of 1,685,270 tons, owing mainly to the development of industry.

The total annual importation of coal into Belgium in 1913 was 8,294,000 tons (excluding foreign bunker coal, amounting to 1,564,000 tons). The quantity was distributed as follows: German Zollverein, 4,858,000; United Kingdom, 2,166,000; France, 829,000; Holland, 441,000 tons. Exports during the same year amounted to 3,779,000 tons, distributed as follows: Zollverein, 315,000; France, 3,051,000; Holland, 246,000; Switzerland, 167,000 tons.

In August, 1919, the commission dealing with the requirements of Belgium in regard to coal, authorized the monthly exportation of 220,000 tons to France, 40,000 tons to Italy, 10,000 tons to Switzerland, and 10,000 tons to Holland—or 280,000 tons in all. It was originally intended to allow the export of 350,000 tons monthly to France, but transport difficulties necessitated a reduction, and in October a total of 254,000 tons was actually reached. The coal thus exported is "demi-gras," not containing more than 15 per cent. of volatiles, the export of other coal being strictly prohibited. Belgium expects to receive in return 150,000 tons of "charbon gras" per month from the 20,000,000 tons to be supplied annually to France by Germany under the treaty of peace. Some 8,000,000 tons per annum are allocated to Belgium under this treaty, but as the French claims have priority, and as the production in Germany is at present insufficient to cope with all demands, there appears to be but a small prospect of help from this quarter.

In spite of the fact that the coal industry has recovered from the war more rapidly than any other industry in Belgium, the effect of strikes, the insufficiency of transport, and the enormous reduction in imports due to the general coal shortage throughout the world, added to the relative unsuitability of Belgian-produced coal for her own consumption, have created a very grave position in the country. In December, 1919, the situation became increasingly serious. Ordinary household cost, on wagons at station, as much as frs.120-130 per ton, and delivered at the house as much as frs.170, and even offers of these prices did not ensure an adequate supply. Attempts were made by the Ministry of Economic Affairs to remedy this state of affairs: (1) By the introduction of a scale of maximum prices "at the pit head" (e. g., for domestic coal, frs.75; (2) by the consignment to various large towns of certain quantities which will be sold to small retailers at an agreed price; (3) by the proposed establishment of a Special Commission for the Distribution of Coal for Industrial Purposes. In June of this year (1920) a decree was signed empowering the Ministry to seize all coal at the pit's mouth "and to distribute it more equitably among consumers."

The following table shows the number of coke ovens existing and in use in 1914 and the result of the war on their operations:

	Borinage	Centre	Charleroi	Liège	Total
Number of ovens, June, 1914	784	576	486	708	2,554
" completely destroyed	118	61	60	130	369
" badly damaged	203	214	309	112	1,192
" slightly damaged	463	301	117	466	993
" in use, June, 1914	722	545	471	645	2,383
" in use June, 1919	334	155	77	77	643

The output during the war varied between 514,600 tons in 1915 and 792,350 tons in 1916, the highest and lowest figures respectively, compared with 3,523,000 tons in 1913.

A certain number of coke ovens worked during the German occupation, and were able to continue service shortly after the armistice, although extinguished by order of October 25, 1918. Others were in a position to start in two or three months, while those which were badly damaged and required heavy repairs could not be started for six months. A very few were entirely destroyed by the Germans, and some had their recovery plant removed but could be operated as ordinary ovens.

Many ovens, like those of the Cockerill works, used a mixture of local and foreign coal, the latter being richer in volatile matter. The coke ovens in the Liège district depended for 54.3 per cent. of their coal on foreign supplies, and the total consumption of coal in 1913 by coke ovens in the country was 2,806,300 tons of Belgian and 1,795,450 tons of foreign coal. Consequently they were unable, owing to the deficiency of foreign and particularly German coal, to be so rapidly reestablished.

In the circumstances the recovery of the coke industry was naturally slow. While in January, 1914, the output amounted to 265,359 tons, the corresponding month of 1919 saw a production of only 22,394 tons, 854 men being employed as compared with 3,500. By May the work of repairing damages had made sufficient progress to ensure an output of 58,000 tons, employing 1,468 men. The total production for the first five months in 1919 was 188,152 tons, compared with 1,262,637 tons in the corresponding period of 1914.

The imports of coke in 1913 were 1,127,000 tons allocated as follows: Zollverein, 1,002,000; France, 51,000; Holland, 74,000 tons. The exports

during the same period amounted to 1,241,000 tons, to the following destinations: Zollverein, 518,000; France, 547,000; Holland, 38,000; other countries, 138,000 tons.

The number of factories making briquets in 1913 was 62, employing 1,911 workmen and producing 2,608,640 tons. This production was distributed among the various colliery districts approximately as follows: Charleroi, 70 per cent.; Liège, 17 per cent.; Namur and Centre, six per cent. each, and the Borinage, one per cent.

The factories were generally kept in order by the Germans during the war for the benefit of their railway transport, but the output depreciated by about 40 per cent. in 1915 and 56 per cent. in 1918. Consequently the resumption of output after the armistice was comparatively rapid, and not only were the existing factories reinforced but a new plant was built in order to utilize the small dry coal, the sale of which was rendered difficult owing to the inactivity of zinc factories and brick works. The monthly production in January, 1919, was 92,760 tons, compared with 202,000 tons in the same month of 1913; in March it had increased to 136,463 tons, and in May to 291,540 tons, or 20 per cent. more than the average of 1913, the number of men employed in the industry during this month having increased since January from 1,289 to 2,058.

The export of briquets from Belgium during 1913 was 760,000 tons, distributed as follows: Zollverein, 14,000; France, 642,000; Holland, 4,000; other countries, 100,000 tons. Imports amounted in the same year to 467,000 tons, distributed as follows: Zollverein, 458,000; France, 2,000; Holland, 7,000 tons.

During the first seven months of 1919 exports of briquets amounted to 228,487 tons, as compared with about 440,000 tons during the corresponding period of 1914. The imports were insignificant.

BELGIAN COAL AND COKE OUTPUT

The output of the coal mines of Belgium since 1913, according to the reports made by M. Joseph Libert, Director-General of Mines, has been as follows:

Year	Couchant de Mons Metric tons	Centre Metric tons	Charleroi Metric tons	Namur Metric tons	Liège Metric tons	Total Metric tons
1913.....	4,406,550	3,458,640	8,148,020	829,900	5,998,480	22,841,590
1914.....	3,578,840	2,701,550	5,764,410	534,180	4,135,070	16,714,050
1915.....	3,310,200	2,573,430	3,875,690	410,660	4,007,520	14,177,500
1916.....	3,705,540	3,212,860	5,223,970	497,150	4,223,350	16,862,870
1917.....	3,869,680	2,785,400	4,671,240	437,870	3,155,510	*14,931,340
1918.....	3,281,720	2,559,610	4,493,630	374,440	3,112,530	*13,887,600
1919.....	4,047,480	3,113,780	6,269,140	510,690	3,544,330	*18,487,230

*Includes 11,640 tons produced in the Campine in 1917; 65,670 tons in 1918 and 1,001,810 tons in 1919.

The number of workmen employed in 1913 was 145,337, and in 1914, 120,157; 1915, 123,806; 1916, 126,092; 1917, 111,695; 1918, 110,110; 1919, 149,662.

The production of coke and briquets was as follows:

Year	COKE				Total Metric tons
	Hainaut Metric tons	Liège Metric tons	Other provinces Metric tons		
1913.....	2,220,180	877,130	445,690	*	3,523,000
1914.....	1,406,460	595,210	?		2,001,670
1915.....	424,460	90,140	—		514,600
1916.....	667,530	124,820	—		792,350

1917.....	648,210	27,830	—	676,040
1918.....	509,150	13,060	—	522,210

At coke ovens in 1913, 4,220 workmen were employed, and in 1918, 1,516.

BRIQUETS

Year	Hainaut Metric tons	Namur Metric tons	Liège Metric tons	Other provinces Metric tons	Total Metric tons
1913.....	1,864,200	171,010	453,350	120,000	2,608,640
1914.....	1,371,480	128,730	299,490	?	1,799,700
1915.....	968,470	135,220	386,410	—	1,490,100
1916.....	1,300,850	166,719	468,260	—	1,935,820
1917.....	707,690	70,130	204,110	—	981,930

In 1913, 1,911 workers were engaged at briquet works, and in 1917, 1,156.

SOUTH RUSSIAN COAL INDUSTRY: 1915-1919*

At the outset it should be understood that under the name of "Russian Coal Industry" reference can only be made at present to the South Russian industry, more precisely in and about the Donetz district. Poland is no longer Russia. Siberia and the Urals are for the moment cut off from South Russia by the Bolshevik dominion; the Caucasus is all in a ferment, and the Moscow coal district, which has never played a very important part has, so far as can be judged, stopped work entirely.

Even in the Donetz district some separation of interest has occurred in the coalfields, as one-half of them (principally the anthracite mines) belong to the autonomous Province of the Don Cossacks, and the other half (the bituminous mines) belong to that part of Russia which is now (October, 1919) under the rule of the volunteer army. In so far as the writer is able to treat these separate parts of the coalfield conjointly, that is only rendered possible by the Mining Association of South Russia which unites in its organization the interests of both parts, the association being composed of the representatives of all the coalowners of the district.

How all the kaleidoscopic political changes of the past five years reacted upon the coal industry may be gathered by the following data, giving the figures of monthly outputs, either average or individual, as shown in each case:—

Last Period Before the War.—At this time the output was constantly increasing, and the average per month during the first half-year (1913) was 2,030,000 tons; in the second half-year (1913) it was 2,120,000 tons; and in the first half-year of 1914 it was 2,350,000 tons.

Period of War until the Revolution.—During this period the output went on increasing (with a small decline in 1915), and reached its maximum rate per annum in 1916, and per month during the first quarter of 1907, i.e., the last three months before the Revolution. Average monthly outputs were as follows:—During the second half-year (1914), 2,250,000 tons; first half-year (1915), 2,180,000 tons; second half-year (1915), 2,260,000 tons; first half-year (1916), 2,230,000 tons; second half-year (1916), 2,440,000 tons and first quarter (1917), 2,450,000 tons.

First Invasion of the Bolsheviks (March, 1917, to November, 1917).—In this period the monthly output decreased continually from 2,500,000 tons in March to 1,870,000 tons in November. From May onward in this period in the South there began the separatist movement for an independent Ukraine.

First Invasion of the Bolsheviks (November, 1917, to May, 1918).—In this period output diminished at once from 1,870,000 tons in November to 1,260,000 tons in December, 1917, and then continued rapidly to decrease to 440,000 tons in May, 1918, principally in consequence of socialist experiments with nationalization of mines and works, with committees of workmen controlling not only the working

*Abstracted from a report made by the Kharkof correspondent of the *Iron and Coal Trades Review* (London; England) and originally published in that journal.

but also the funds and income of coal companies. These rulers very soon destroyed the whole coal industry of their dominion, and therewith lopped off the branch on which they were sitting—a highly instructive object lesson.

Under the Rule of the Hetman and the Germans (May to October, 1918), output rose slowly from 440,000 tons in May to 800,000 tons in October. This increase can only be ascribed to the restoration of some kind of order after the Bolshevik anarchy, for the German authorities who now directed the whole policy of their puppet, the Hetman, had no interest in restoring work in the mines.

The Directory of Petlura (November-December, 1918).—The output of coal in November, 1918, was 770,000 tons, and in December 720,000 tons. As soon as the Germans had left, and the Bolsheviks came in earnest to reconquer the South, the army of Petlura ran away in a panic, and the Red Army marched triumphantly from Kursk to Sebastopol and Kief, occupying on their way also the Donetz district.

Second Invasion of the Bolsheviks (end of December, 1918, until May, 1919).—This was the hardest time of all, even worse than during the first occupation by the Bolsheviks; for if, on the one hand, their administrative apparatus was now better organized, and their Red Army better disciplined than in 1917 and in the spring, 1918, on the other hand they used these weapons more systematically for destroying all historical institutions and cultural blessings. Even all the intelligent workmen soon ceased to uphold them, for they at last understood that they had nothing to gain but all to lose under such a reign of anarchy and terror. So it was only natural that output again decreased and fell from 720,000 tons in December, 1918, to 240,000 tons in June, 1919, and even this small quantity was raised almost entirely in the mines of the Don Province, for the mines in the territory of the Bolsheviks practically ceased working.

GENERAL OUTPUT AND DELIVERIES

In order to maintain touch with former contributions, a table is presented showing the output of coal in all Russia, by districts, until the year 1915, as this is the last year for which statistical data for the whole Empire can be obtained here under present conditions:—

TABLE I.—Output in Thousands of Tons.

	1913	1914	1915
South Russia	24,900	27,600	26,240
Poland	6,880	3,725	—
District of Moscow.....	69	66	61
Urals	1,185	1,261	1,275
Caucasus	71	80	75
Siberia and Turkestan.....	2,160	2,102	2,247
Total	35,265	34,834	29,898

As will be seen from this table, the decrease in the total output of 1915 is caused almost entirely by the loss of Poland. A small decline in the South was only temporary, and was made good in the next year. The other districts show no great changes, and if there are any, they are rather in the direction of an increase—at least in the more important coalfields. The same may be expected for the year 1916, while since 1917 there must have been a heavy falling-off in the Urals, the Caucasus and Turkestan, and in 1918 Siberia, at least the western part of it, was also drawn into the vortex of civil war.

For the remainder of this article the Donetz district can be referred to, as information about the other coalfields is not yet available. After the crisis of 1910 the coal industry of this district developed rapidly, and during three years, from 1910 to 1913, increased its output by 50 per cent. The war slackened but

did not stop this development, and the highest rate of output per year was reached in 1916. For the following year a still greater output could be expected, and the first three months of 1917 began with a very good record. Then, however, the Revolution put a stop not only to any further development, but in its consequences nearly ruined the whole industry, as explained above.

The principal reasons for the catastrophic decrease of output were, as we have seen, (1) the Revolution and its fatal consequences, and (2) the confusion in railway transport, which in itself was again one of the results of civil war. The highly unsatisfactory working of railways caused (1) a lack of provision and materials for the mines, and (2) by hampering regular deliveries, a want of ready money for working them. But besides all this there is to be noted an unprecedented decrease in the productivity of labor. Before the war, in 1913 the yearly output per head of the workmen was 148 tons, or 12.3 tons per month. But during the war this rate fell continuously, for the staff of workmen became less efficient in consequence of its being recruited with incompetent and weak elements, such as captives, fugitives, Chinese coolies, women, and children. Since the revolution even qualified coolies have worked badly, and so the average monthly output per workman in June, 1918, was only 3.8 tons, and in June, 1919, not more than 1.97 tons.

TABLE II.—*Output of Coal and Deliveries by Rail in the Donetz District since 1916*
(in Thousands of Tons).

	1916		1917		1918		1919	
	Output	Deliveries	Output	Deliveries	Output	Deliveries	Output	Deliveries
First quarter....	7,520	5,460	7,320	4,780	2,960	1,660	1,790	740
Second quarter...	5,850	5,660	6,200	4,760	1,690	800	750	450
Third quarter....	6,860	5,730	5,680	4,140	1,940	860	1,020	(?)
Fourth quarter...	7,770	5,110	5,160	3,000	2,300	1,020	—	—
Total	28,000	21,960	24,360	16,680	8,890	4,340	—	—

Coke Production.—In the Donetz district there are, partly at the mines and partly at the larger ironworks, 6,527 coke ovens, with a producing capacity of over 5,000,000 tons per year, but in fact, they have never reached such a production. In 1914 the total was 4,300,000 tons, in 1915—4,113,000 tons, in 1916—4,370,000 tons, in 1917—3,532,000 tons, and in 1918—693,000 tons. At present most ovens have entirely stopped working, and the quite insignificant production of about 5,000 tons per month is used up almost exclusively by iron and steel works.

Stocks at Mines.—During recent months the stocks of bituminous coal, which at the beginning of 1919 were about 800,000 tons, have heavily decreased, in consequence of the very small output, and on August 1 they amounted to no more than 400,000 tons, of which two-thirds are stored at small mines, which have suffered less from socialist experiments. The larger ones, which were "nationalized" and underwent several other trials, are left almost without any stocks, so that some of them are now compelled to purchase fuel for maintaining pumping work. Stocks of anthracite are considerably greater, especially in the Province of the Don Cossacks. At the beginning of this year they amounted to 1,000,000 tons, and at August 1 had actually increased to 1,200,00 tons. Consequently the whole stock of fuel, anthracite, and bituminous coal on August 1 totalled 1,600,000 tons.

GERMANY'S OBLIGATIONS UNDER PEACE TREATY

Germany, under a strict interpretation of the terms of the peace treaty, could be required to deliver coal in amounts ranging from 39,500,000 to 43,500,000 tons to France, Belgium and Italy during the next five years and 31,500,000 tons for the five years following the expiration of that period. France, which suffered

most in mine destruction from the Huns, receives the major allotment, Belgium is allotted 8,000,000 tons annually, while Italy receives 4,500,000 tons the first year and increasing tonnages bringing shipments up to 8,500,000 tons per annum at the end of June, 1924. The terms covering these deliveries, Annex V to Part VIII of the treaty, read as follows:

1. Germany accords the following options for the delivery of coal and derivatives of coal to the undermentioned signatories of the present treaty.

2. Germany undertakes to deliver to France 7,000,000 tons of coal per year for ten years. In addition, Germany undertakes to deliver to France annually for a period not exceeding ten years an amount of coal equal to the difference between the annual production before the war of the coal mines of the Nord and Pas de Calais, destroyed as a result of the war, and the production of the mines of the same area during the years in question; such delivery not to exceed 20,000,000 tons in any one year of the first five years, and 8,000,000 tons in any one year of the succeeding five years.

It is understood that due diligence will be exercised in the restoration of the destroyed mines in the Nord and the Pas de Calais.

3. Germany undertakes to deliver to Belgium 8,000,000 tons of coal annually for ten years.

4. Germany undertakes to deliver to Italy up to the following quantities of coal:

		Tons
July, 1919, to	June, 1920.....	4,500,000
July, 1920, to	June, 1921.....	6,000,000
July, 1921, to	June, 1922.....	7,500,000
July, 1922, to	June, 1923.....	8,000,000
July, 1923, to	June, 1924.....	8,500,000
And each of the following five years.....		8,500,000

At least two-thirds of the actual deliveries to be land-borne.

5. Germany further undertakes to deliver annually to Luxemburg, if directed by the Reparation Commission, a quantity of coal equal to the prewar annual consumption of German coal in Luxemburg.

6. The prices to be paid for coal delivered under these options shall be as follows:

(a) For overland delivery, including delivery by barge, the German pithead price to German nationals, plus the freight to French, Belgian, Italian, or Luxemburg frontiers, providing that the pithead price does not exceed the pithead price of British coal for export. In the case of Belgian bunker coal the price shall not exceed the Dutch bunker price. Railroad and barge tariffs shall not be higher than the lowest similar rates paid in Germany.

(b) For sea delivery, the German export price f. o. b. the German ports, or the British export price f. o. b. British ports, whichever may be lower.

7. The Allied and Associated Governments interested may demand the delivery, in place of coal, of metallurgical coke in the proportion of three tons of coke to four tons of coal.

Up to May, 31, 1920, however, according to the Reparations Commission, German deliveries under the treaty had been as follows: France, 4,686,042 tons, of which 405,000 tons were handed to Luxemburg; Italy, 316,063 tons; Belgium, 98,553 tons. Under the terms of the treaty, Germany undertook to deliver to France 7,000,000 tons a year, besides an annual quantity not exceeding 20,000,000 tons in any one year by way of compensation for the destroyed mines of Northern France; to Italy, by June 20, 4,500,000 tons; to Belgium, 8,000,000 tons; to Luxemburg, a quantity equal to the prewar annual consumption of German coal in Luxemburg.

The failure of Germany to live up to her obligations was the subject of pointed controversy between her and representatives of the Allied Powers. Upon representations made during the Spa meeting in July of this year, it was proposed that the maximum deliveries be reduced to 2,000,000 tons monthly.

The supplemental agreement, as finally signed at Spa July 16, 1920, read:

1. The German Government undertake to place at the allied disposal from Aug. 1, 1920, for the ensuing six months, 2,000,000 tons of coal monthly, the figure approved by the Reparation Commission.

2. The Allied Governments credit the German account with the Reparation Commission with the value of this coal in so far as it is delivered by rail or inland waterway and valued at the German domestic price in accordance with Paragraph 6 of Annex 5, Part 8 of the Treaty of Versailles. In addition, in consideration of the admission of the Allied right to have coal of a specific kind and quality, an additional

sum of 5 gold marks per ton will be paid in cash, to be utilized for the purchase of food for German miners.

3. During the period of six months the stipulations of Paragraph 2, 3 and 4 of the coal control protocol of July 11, 1920, shall be put into force at once in a modified form, as laid down in the annex.

4. Agreement to be made immediately for the distribution of Upper Silesian coal by a committee on which Germany shall be represented. This committee is to be approved by the Reparations Commission.

5. A committee is to be made up immediately at Essen to take measures to improve the conditions of food, clothing and housing of German miners.

6. The Allied Governments declare their readiness to make advances to Germany equal in amount to the difference between the price to be paid according to the treaty and the export price of coal f. o. b. at a German port, or the English export price f. o. b. at an English port, whichever may be the lower, as laid down in Paragraph 6, Annex 5, Part 8 of the Treaty of Versailles. These advances to be made in accordance with Articles 235 and 251 of the Treaty of Versailles. They to enjoy absolute priority over all other allied claims upon Germany. Payment to be made at the end of each month in accordance with the amount delivered and the export price. At the end of the first month advances to be made by the Allies on account, without waiting for the exact figures.

7. If by Nov. 15, 1920, it is ascertained that the total deliveries for August, September and October are below 6,000,000, the Allies will proceed to occupy a further portion of German territory, either the Ruhr or another.

GERMAN COAL TRADE DURING THE WAR

The coal output in what, until the peace treaty signed last year, was the German Empire was approximately 28,001,000 tons less in 1918 than in 1913. The progressive decline in output following the outbreak of hostilities in 1914 was checked in 1916 and would, according to German authorities, have been greater in 1918 than in 1917 but for the collapse in industrial Germany following the armistice.

Production by districts from 1913 to 1916, both inclusive, according to figures published in 'Glückauf,' was as follows:

District	1913		1914		1915	
	Tons	P. C.*	Tons	P. C.*	Tons	P. C.*
Ruhr	114,536,000	59.81	98,260,000	60.83	86,794,000	59.16
Upper Silesia	43,801,000	22.87	37,257,000	23.06	38,299,000	26.10
Lower Silesia	5,527,000	2.89	4,888,000	3.03	4,547,000	3.04
Saar†	12,223,000	6.38	9,276,000	5.74	8,218,000	5.60
Aachen	3,264,000	1.70	2,734,000	1.69	2,257,000	1.54
Saxony	5,470,000	2.86	4,836,000	2.99	4,272,000	2.91
Totals	184,821,000		157,251,000		144,297,000	

District	1916		1917		1918	
	Tons	P. C.*	Tons	P. C.*	Tons	P. C.*
Ruhr	94,163,000	59.28	99,055,000	59.20	95,942,000	59.77
Upper Silesia	41,985,000	26.43	42,944,000	25.67	39,322,000	24.85
Lower Silesia	4,555,000	2.87	4,582,000	2.74	4,649,000	2.90
Saar†	8,782,000	5.53	9,613,000	5.75	9,214,000	5.94
Aachen	2,501,000	1.57	2,514,000	1.50	2,526,000	1.57
Saxony	4,174,000	2.63	4,770,000	2.85	4,609,000	2.87
Totals	156,160,000		163,478,000		156,822,000	

* Per cent of total production.

† State pits.

Taking the pre-war figures as 100 per cent., the average production in the different districts for the war period (1914-18) was as follows: Ruhr, 82.81 per cent.; Upper Silesia, 91.49; Lower Silesia, 83.70; Saar, 73.80; Aachen, 76.79, and Saxony, 82.86 per cent.

THE COAL TRADE

Coal, coke and briquet production and labor statistics for the Ruhr district during the war period are shown in the following table:

Year	Coal Tons	Coke Tons	Briquets Tons	Men, including officials	Prisoners of war	Totals, including prisoners
1914.....	98,260,017	20,779,477	4,291,996	382,869	.....	382,869
1915.....	86,794,894	20,433,065	4,319,178	300,613	12,709	313,322
1916.....	94,164,191	26,281,530	3,943,447	317,962	49,361	367,323
1917.....	99,073,118	26,866,706	3,696,681	368,130	56,502	424,632
1918.....	95,940,772	26,871,994	3,671,235	380,811	54,952	435,763

Before the war Germany ranked next to England in the matter of coal exports. While the peace treaty terms cripple her shipping, it must be remembered that the bulk of her foreign coal business was to points that could be reached by rail or inland water carriage. In 1913, the chief exports were as follows, those from the United Kingdom being given for comparison:

	From			From	
	Germany	United Kgd.		Germany	United Kgd.
Austria-Hungary	12,153,000	1,057,000	Italy	892,000	9,647,000
Netherlands	7,218,000	2,018,000	Spain	279,000	2,534,000
Belgium	5,728,000	2,031,000	Denmark, Iceland.	220,000	3,139,000
France	3,242,000	12,776,000	Sweden	178,000	4,563,000
Russia	2,103,000	5,998,000	Roumania	131,000	252,000
Switzerland	1,639,000	.....	Other countries ..	791,000	29,385,000
			Total	34,574,000	73,400,000

The course of prices is shown elsewhere under the caption of "German Coal Prices."

Detailed figures covering 1919 production are not yet available. The output in Prussia, however, according to the latest figures, dropped 40,778,625 tons, or 26.29 per cent. The total for Prussia was 112,031,341 tons in 1919. Comparative figures for 1918 and 1919, by districts, show:

District	Production		Decrease Pct. 1919 under 1918
	1919, Tons	1918, Tons	
Breslau	29,798,367	44,307,009	32.77
Halle	17,911	5,404	231.44*
Clausthal	436,730	579,775	24.67
Dortmund	67,942,724	91,952,108	26.11
Bonne	13,844,609	15,965,670	13.29

The brown coal industry produced 76,149,308 tons, as compared with 83,450,199 tons in 1918, a decrease of 8.75 per cent. District production was as follows:

District	Production		Decrease Pct. 1919 under 1918
	1919, Tons	1918, Tons	
Breslau	3,791,111	2,616,378	44.90*
Halle	46,201,250	53,301,638	13.32
Clausthal	995,873	930,170	7.00*
Bonne	25,161,074	26,602,018	5.42

* Increase.

GERMAN COAL PRICES

Increased prices for coal during and since the war of 1914-18 have been common to all countries, but the advances effected in German quotations have been little short of phenomenal. The following table, covering prices quoted for coal delivered in wagons at the pithead in the Ruhr district illustrates this situation. The prices since April, 1918 include the coal tax and, from January, 1919, coal and turnover taxes. Prices are in marks per ton.

	January, 1914	April, 1918	January, 1920	February, 1920	March, 1920
Best Coal:					
Coal	12.00-12.75	24.30-26.10	106.90-108.70	149.70-151.50	168.00-169.80
Best Mixed	13.00-13.50	25.80-27.60	108.40-110.20	162.30-164.10	182.30-184.10
Lumps	14.00-14.50	27.00-28.80	109.60-111.40	174.90-176.70	196.50-198.30
Nuts, I and II	14.25-15.00	27.60-29.40	117.70-119.50	179.10-180.90	201.30-203.10
III	14.25-15.00	27.30-29.10	117.40-119.20	179.10-180.90	201.30-203.10
Coking coal	12.25-13.00	25.50-27.30	118.10-119.90	162.50-164.30	171.20-173.00
Gas and Gas-Flame Coal:					
Gas coal	12.50-14.50	26.10-28.20	108.70-110.80	169.30-171.40	190.20-192.30
Gas-flame coal	12.25-13.25	24.60-26.70	107.30-109.30	156.40-158.50	175.70-177.80
Flame coal	11.50-12.00	24.00-25.80	106.60-108.40	149.70-151.50	168.00-169.80
Lumps	14.00-15.50	27.00-28.80	109.60-111.40	174.90-176.70	196.50-198.30
Nuts, I and II	14.25-15.00	27.60-29.40	117.70-119.50	179.10-180.90	201.30-203.10
III	14.25-15.00	27.30-29.10	117.40-119.20	179.10-180.90	201.30-203.10
IV	13.75-14.50	26.70-28.50	116.80-118.60	172.10-173.90	193.40-195.20
Small nuts, 0-20/30 mm ..	9.00-10.00	21.00-22.80	103.60-105.40	145.70-147.50	163.70-165.50
30/60 mm ..	10.50-11.25	22.20-24.00	104.80-106.60	146.90-148.50	164.90-166.50
Small coal or coal dust ..	8.00-10.75	19.20-25.50	101.80-108.10	143.60-149.90	161.60-167.90
2nd Quality Coal:					
Coal	11.25-12.75	23.40-26.10	106.60-108.70	148.00-150.70	166.10-169.00
Mixed coal	12.25-13.25	24.90-26.70	107.50-109.30	152.50-154.30	171.20-174.30
Lumps	13.75-16.25	27.00-29.40	109.60-112.00	174.90-182.30	196.50-204.70
Nuts, I and II	15.75-19.00	31.80-34.80	121.90-124.90	201.40-204.40	226.50-229.50
III	16.50-20.00	28.80-34.80	118.90-124.90	189.70-195.70	213.20-219.20
IV	12.25-14.75	24.60-28.50	114.70-118.60	170.00-173.90	191.30-195.20
Anthracite:					
Nuts, I	30.50-22.00	35.40-37.20	125.50-127.30	197.20-199.00	221.80-223.60
II	22.00-26.00	37.20-42.60	127.30-132.70	220.80-226.20	248.80-254.20
Small	10.25-11.25	21.60-24.60	104.20-107.20	145.60-145.80	163.30-166.50
Small or dust	7.20-10.00	17.40-22.30	100.00-105.10	139.60-145.10	157.00-163.50
Coke.—Blast-furnace coke ..	15.00-17.00	32.40-34.80	155.00-158.20	216.30-217.70	242.90-244.50
Foundry coke	19.00-21.00	34.20-36.00	155.60-157.40	226.10-227.90	254.00-255.80
Piece coke	21.00-24.00	36.00-39.00	175.90-178.90	258.30-259.50	290.40-291.60
Briquettes	11.50-15.00	25.70-35.50	147.10-151.90	218.20-223.00	201.40-266.20

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COAL PRODUCTION OF AUSTRIA

The coal resources of the old Austrian-Hungarian empire were hard hit by the outcome of the war of 1914-18. As a result of the terms of the peace treaty imposed upon the Austrian remnant of the dual monarchy, most of the former coal mines of the country are now within the boundaries of other countries. Transportation facilities have broken down, and the import of fuel is further impeded by various governmental regulations, customhouse formalities and import restrictions.

The present coal requirements of new Austria are estimated at 48,000 tons per day. Its production during 1919 was at the rate of only 6,910 tons, the greater part of which was brown lignite. Under a late agreement with Czechoslovakia and Germany, Austria is entitled to 11,000 tons of coal daily, and if this amount were actually received the needs of Austria would be supplied to the extent of about 30 per cent. But up to May, 1920, only 60 per cent. of this supply had been received. At that time it was reported that under the Allied control recently instituted in Upper Silesia about 200,000 tons of Upper Silensian coal would be sent to Austria monthly.

There is given on the next page the yearly production of the coal mines in the present Austria from 1905 to 1919, inclusive. There has been a gradual increase during recent months in the output. The workmen need work only eight hours per day, but they are reported to be working nine. Most of the output, it will be observed, is the brown coal (lignite), which is of poor quality.

Year	Coal Metric tons	Lignite Metric tons	Total Metric tons	Year	Coal Metric tons	Lignite Metric tons	Total Metric tons
1905.....	60,458	2,345,474	2,405,933	1913.....	87,516	2,659,582	2,747,098
1906.....	62,976	2,499,189	2,562,165	1914.....	84,862	2,397,746	2,482,609
1907.....	55,515	2,724,876	2,780,391	1915.....	76,424	2,485,627	2,562,051
1908.....	55,481	2,693,173	2,748,654	1916.....	86,606	2,505,763	2,592,369
1909.....	60,934	2,569,205	2,630,139	1917.....	88,804	2,212,229	2,301,034
1910.....	74,338	2,520,846	2,595,184	1918.....	94,573	2,065,780	2,160,353
1911.....	84,684	2,566,349	2,651,034	1919.....	89,791	1,986,013	2,075,805
1912.....	90,505	2,644,583	2,735,089				

CZECHOSLOVAK PRODUCTION AND CONSUMPTION

In 1913, the collieries located in what is now Czecho-Slovakia, produced 14,271,000 metric tons anthracite and 23,113,000 metric tons bituminous coals. There was exported 2,024,000 metric tons anthracite; 1,057,000 metric tons coke, and 7,969,000 metric tons bituminous. The imports were 5,878,000 metric tons anthracite; 619,000 metric tons coke, and 532,000 metric tons bituminous. The foreign fuels were used by blast furnaces and steel mills where special processes are in vogue.

The 1919 Czechoslovak coal production was 10,200,000 metric tons anthracite and 16,500,000 metric tons bituminous. Under Section 224 of the Austrian Treaty the exports were 1,000,000 metric tons anthracite and 3,500,000 metric tons bituminous leaving but 9,200,000 metric tons anthracite and 13,000,000 metric tons bituminous for domestic requirements, or, compared to normal supply, 56 per cent. anthracite and 64.7 per cent. bituminous.

Ten to 15 per cent. of the 1919 output was used in mine operations. Next in urgency came railroads, waterworks, gas and electric light plants, flour mills and bakeries. Then in lesser proportion followed allotments for house heating and large steel mills. Deducting the quantities set aside for preferential agencies the coal left for the use of remaining institutions was about 45 per cent. of normal requirement.

COAL RESOURCES OF POLAND

The chief source of coal supply for the new republic of Poland is the Silesian-Moravian-Cracow basin. Before the war the Dombrowa section of this region was held by Russia, the Mährisch-Ostrau-Teschen by Austria and the Beuthen-Königshütte by Germany. This last region is also known as the Upper Silesian and constitutes about 53 per cent. of the total area, estimated at 5,690 square kilometers, of the basin. Development of this region started about the middle of the eighteenth century: by 1791 the output was 78,000 tons and by 1800 it had grown to 106,000 tons. Warfare brought about a period of decline that did not end until the introduction of the railroads. In 1910, production was 34,229,360 tons; in 1913, it was 43,434,944 tons.

Exploitation of that part of the basin within Congress Poland began about 1796 and by 1825 the output was 70,000 tons. The average yearly production by decades from 1792 to 1910 and by years until 1913 was as follows:

Period	Tons	Period	Tons
1792-1800	1,031	1841-1850	139,888
1801-1810	3,540	1851-1860	157,458
1811-1820	8,500	1861-1870	231,070
1821-1830	56,380	1871-1880	602,293
1831-1840	75,780	1881-1890	1,925,038

1891-1900	3,517,624	1911	5,770,000
1901-1910	4,855,505	1912	6,315,000
1910	5,469,000	1913	6,833,588

In 1913, exports to Russia constituted about 10.2 per cent. (653,173 tons) of the output. The fuel requirements of Congress Poland that year were estimated at 8,718,055 tons, of which 68.5 per cent. came from the Dombrowa (Congress Poland) field. Approximately 13 per cent., or 1,131,390 tons were imported from Upper Silesia.

The development of the Galician (or Austrian) part of the basin dates back to 1870 when production was 188,000 tons, as compared with 1,971,000 tons in 1913. The relative production of the component parts of the Silesian-Dombrowa-Cracow basin in the immediate prewar period is indicated in the following table:

	Number of pro- ductive mines	Production Tons	Workmen engaged Number
Upper Silesia:			
1910	86	34,446,000	117,009
1913	57	43,435,000	123,349
Congress Poland:			
1910	31	5,469,000	23,516
1913	32	6,834,000	22,877
Galicia:			
1910	8	1,346,000	6,421
1913	7	1,971,000	6,988

The requirements of Poland today are estimated at 13,000,000 tons annually. The 1919 production was 6,145,027 tons, divided as follows: Dombrowa field, 4,614,710 tons; Cracow, 1,408,982 and Teschen, 121,333 tons. One result of this deficiency is the increased exploitation of lignite deposits, the yield from which during the last quarter of 1919 was 31 per cent. greater than for the same period in 1913.

BULGARIAN COAL SUPPLY AND CONSUMPTION

Coal mining in Bulgaria is still in the infancy stage. The production is insufficient for the country's needs from the standpoint of tonnage, the quality is not of the best and the output per man approximates only one-third of a ton per day as compared with .599 tons in 1911. Wages have increased from 2.46 leva (or 47.48 cents at normal exchange) to 30 leva (\$5.79) and the cost per ton has risen from 7.42 leva (\$1.432) to 120 leva (\$23.16).

While there are several coal-bearing measures in Bulgaria, the only one that has been extensively developed is the Pernik region lying about 23 miles southwest of Sofia. The productive area of the mines there, all state-owned, is about 23 square miles. Second in importance is the state-owned mine Bobov-Dol, about 15 miles south of the Pernik mines. Other deposits are found in the Balkan Mountains, north of the Maritza River and near Burgas. Some of the mines in these latter regions are privately owned. The greater part of the coal produced is a fair quality soft, brown lignite; black coal is found in the Stara Planina or Balkan Mountain region. The total annual production since 1911 has been as follows:

Years	Lignite Metric tons	Black Coal Metric tons	Years	Lignite Metric tons	Black coal Metric tons
1911	260,540	8,064	1913	347,525	10,220
1912	306,488	7,055	1914	408,620	12,551

Years	Lignite Metric tons	Black Coal Metric tons	Years	Lignite Metric tons	Black Coal Metric tons
1915	515,263	18,502	1918	646,602	26,272
1916	623,681	16,132	1919 ^a	550,000	20,000
1917	742,221	19,052			

^a Estimated.

Over 50 per cent. of the coal consumed in the country is used by the railroads; between 30 and 40 per cent. is consumed by industrials, among which sugar and textile interests are probably the largest factors. Deliveries to the railways from 1911 to 1918 were as follows: 1911, 99,292 metric tons; 1912, 158,141; 1913, 207,306; 1914, 163,159; 1915, 274,416; 1916, 424,478; 1917, 558,620; 1918, 522,200 metric tons.

Imports of coal and coke between 1914 and 1917 (there were no imports in 1918 or 1919) were as follows:

Year	Coal Metric tons	Coke Metric tons	Year	Coal Metric tons	Coke Metric tons
1911.....	184,070	4,930	1915.....	375	....
1912.....	153,284	4,443	1916.....	360	....
1913.....	106,961	1,003	1917.....	54,207	1,902
1914.....	213,109	5,460			

Prior to the war the greater part of the coal imported came from England and Turkey. A very small quantity of Serbian coal was imported at ports along the Danube for local use. Because of its superior quality, the English coal was reserved almost exclusively for railroad use. The bulk of the foreign coal was consumed in the eastern part of the country. Before the war Bulgaria imported coke from England, Germany, Austria and Belgium. Bulgaria produces no coke. No coal is exported.

COAL FIELDS OF PORTUGAL

Coal is found both in the northern and southern parts of Portugal. In the north the outcrop of the deposits extends for a length of 37 miles between S. Pedro Fins and Gafantras. The average composition and calorific value are: Carbon, 75 to 79 per cent.; hydrogen, 1.5 per cent.; oxygen and nitrogen, 3.5 per cent.; calories, 6,600 to 7,800. The Cabo Mondego coal area is situated near Figueira da Foz in the Coimbra district, in central Portugal. The average composition and calorific value of the coal are: Carbon, 65 to 78 per cent.; hydrogen, 5 to 7 per cent.; calories, 6,600 to 7,800. No borings have been made to determine the depth of the seams, but they are known to extend to a depth of 1,000 feet from the surface.

In every case the coal seams are very narrow, running from three to six inches wide and very rarely to be found at any place as wide as a foot and a half. The coal is only extracted with considerable admixture of sand, slate, and other impurities. At spots some real anthracite is found running in a small pocket or thin vein, but quickly lost. There is no anthracite of any appreciable quantity in any of these mines. The coal found in Portugal is from ligneous, brown coal to real lignite and real bituminous at times, but the grade is very low.

There were in operation to 1918 only 21 mines of any importance. The value of the coal extracted in 1917 was about \$500,000.

COAL PRODUCTION IN SPAIN

According to figures announced by the Spanish Ministerio de Fomento, the production of coal in Spain from 1914 to 1918 was as follows, in metric tons of 2,204.6 pounds:

	1914	1915	1916	1917	1918
Anthracite	228,300	222,600	268,100	310,900	617,200
Bituminous	3,905,100	4,135,900	4,847,500	5,024,800	5,761,600
Lignite	291,000	328,200	473,100	636,800	785,690
Total	4,424,500	4,686,700	5,558,700	5,972,500	7,164,400

NETHERLAND COAL CONSUMPTION

Before the war Holland consumed about 10,000,000 tons annually. Of this quantity only 636,924 tons were supplied by the inland collieries. Apart from the supply of Dutch consumers a large transit trade was done, the figures for 1913 being as follows:

	Tons.
Imports from Germany.....	17,920,274
Imports from England.....	1,958,698
Imports from other countries.....	511,692
Total production of Dutch coal.....	1,774,140
	<hr/>
	22,164,804
Exports to Belgium.....	7,355,109
Exports to other countries.....	4,662,251
Inland consumption:	
Foreign coal	9,510,520
Dutch coal	636,924
	<hr/>
	22,164,804

After the outbreak of war the foreign supplies quickly dropped, and although the production of Dutch collieries was increased, and the export of coal prohibited during 1915, it became evident more stringent measures were required, as the normal demand could no longer be met. Early in 1916 a government coal office was instituted to distribute the available supplies, and take measures to increase the supplies. No costs were spared to increase the output of Dutch collieries, the largest and most important of these being state owned and managed, and the output during that year reached the figure of 2,656,000 tons, or an increase of over 50 per cent. compared with the highest prewar production. Only 5,598,000 tons were imported, bringing the total supplies during the year to about 80 per cent. of prewar consumption.

In 1917 the output of the Dutch collieries increased to over 3,000,000 tons, but the imports fell to 2,603,000 tons, leaving a shortage compared with prewar consumption of over 4,000,000 tons. The next year, however, brought the most critical period; while nearly 3,500,000 tons were produced, imports fell to 1,145,000 tons (of which the greatest part came from Germany).

With the output of the Dutch collieries at 3,600,000 tons the total supply last year was just over 60 per cent. of prewar consumption. The government coal office had estimated the following quantities were the minima required to cover only the barest needs:

	Tons.
Domestic purposes	2,100,000
Industry	4,100,000

THE COAL TRADE

Railways	900,000
Shipping	600,000
	<hr/> 7,700,000

It should not be overlooked that prior to the war the consumption of low grade fuel such as peat, was already fairly important, and that the average quality of the coal was superior to that used at present. A large percentage of the output of the Dutch collieries is low grade, and the average calorific value of the Dutch coals is considerably lower than that of the foreign coal used formerly.

The following table shows the production, net imports and total consumption of coal in the Netherlands during the years 1913-18:

Year.	Home Output.	Net Imports.	Total.
1913.....	1,873,000	8,264,000	10,127,000
1914.....	1,929,000	7,334,000	9,263,000
1915.....	2,262,000	6,712,000	8,974,000
1916.....	2,656,000	5,598,000	8,254,000
1917.....	3,126,000	2,603,000	5,729,000
1918.....	3,419,000	1,145,000	4,564,000

COAL AND COKE SITUATION IN SWEDEN

The only coal-bearing district in Sweden, according to a report of United States Consul-General Murphy, stationed at Stockholm, Sweden, lies in the extreme southern section in the Province of Skane, and is comprised within a limited area; besides coal, the formation includes layers of fine-grained sandstone and various colored clays. The coal veins are of moderate thickness, ranging from one-half to one meter (1½ to 3 feet)—only the lower two being of such constitution and thickness as to permit mining at a profit. Even these narrow veins are accompanied by shales which must be mined with the coal. It is estimated that these veins contain about 300,000,000 tons of coal.

The following table shows the production of coal and coke produced from coal (lignite not being found in Sweden) from 1911 to 1918, inclusive; the statistics for 1919 are as yet unavailable (metric ton = 2,204 pounds):

Years	Coal Metric Tons	Coke Metric Tons
1911-1913 (average)	345,355	52,319,371
1914	366,639	151,864,276
1915	412,261	164,461,628
1916	414,825	181,247,580
1917	442,633	122,924,377
1918	401,494	.....

The consumption of coke and coal—which is included under one heading in the official reports—is shown in the following. The figures given do not include briquets, which are largely made of coal and which are used chiefly for domestic purposes: 1911-1913 (average), 5,154,573 metric tons; 1914, 5,442,814 tons; 1915, 5,468,364 tons; 1916, 5,331,370 tons; 1917, 2,462,960 tons; 1918, 2,902,767 tons.

IMPORTS AND EXPORTS OF COAL AND COKE

The table on the next page shows the imports of coal and coke from 1911 to 1919, inclusive. The principal receiving ports for imports are Goteborg, Stockholm, Gefle, Malmo, Nykoping, and Norrkoping. The larger part of the coal generally comes from England; the briquets also come from England, and in times past some from Germany and Belgium.

Years	Coal Metric Tons	Coke Metric Tons
1911-1913 (average)	4,379,181	432,620
1914	4,626,932	449,576
1915	3,835,687	1,220,446
1916	4,036,452	1,296,161
1917	1,503,757	520,311
1918	1,976,711	524,424
1919	1,942,962	279,147

The export of coal from Sweden was restricted during the war, and the restriction still existed at the time this report was prepared (i.e., spring of 1920). Special permission has been given from time to time to ship coal out of the country. Exports of coal and coke, in metric tons, during the years 1911 and 1918, inclusive, were as follows:

Years	Coal Metric Tons	Coke Metric Tons
1911-1913 (average)	2,480	271
1914	326	7
1915	5	25
1916	1,153	90
1917	3,741	.....
1918	1,705	1,157

The ports from which this small quantity of coal was exported were Goteborg and Jonkoping.

PORT FACILITIES AT STOCKHOLM, MALMO, AND GOTEBOG

The loading and discharging facilities at the port of Stockholm are claimed to be excellent, the quays being equipped with modern electric cranes, steam shovels, etc. Three thousand tons per day can be loaded or discharged with the present equipment. Malmo has likewise excellent facilities, the quay being equipped with modern cranes with a loading and discharging capacity of 3,250 tons per day. The port of Goteborg has better facilities for loading and discharging than either Stockholm or Malmo—having deep-water berths for ships of 12,000 tons which can accommodate 40 ships at one time. There are 61 electric cranes with a capacity of 1½ to 5 tons, a pontoon crane with a lifting capacity of 50 tons, and an electric crane with a capacity of 22 tons. At least 300 tons per day per ship would be a fair estimate for the amount of coal that can be loaded or discharged at Goteborg.

As regards land transportation, facilities in Sweden are ample. The state railways usually handle nearly all the coal that is transported in the country, but one or two of the small private railways are sometimes utilized. The most important dealers in Stockholm invariably make use of the state railways.

DANISH IMPORTS OF COAL AND COKE: 1913-1918

The following table shows (in metric tons of 2,204.6 pounds) the imports of coal, coke, and fuel briquets into Denmark for the years 1913 to 1918, inclusive, and the principal exporting countries:

Articles and countries	1913 Tons	1914 Tons	1915 Tons	1916 Tons	1917 Tons	1918 Tons
Coal:						
Germany	189,211	131,321	109,715	508,115	644,058	687,101
United Kingdom—						
England	1,494,693	1,615,180	1,605,553	1,046,372	424,076	557,414
Scotland	1,401,293	1,374,762	1,469,452	1,197,851	388,320	494,910

THE COAL TRADE

Articles and countries	1918 Tons	1914 Tons	1915 Tons	1916 Tons	1917 Tons	1918 Tons
Wales	32,057	54,157	39,860	48,105	11,103	9,415
Other countries.....	32,272	48,961	6,129	11,679	5,108	2,400
Total, coal.....	3,149,526	3,224,381	3,230,709	2,812,122	1,472,665	1,751,240
Coke	275,270	248,645	449,626	647,319	465,642	360,081
Briquets	148,557	139,455	183,647	245,366	187,506	117,561

In 1919 the United Kingdom shipped 1,742,711 gross tons of coal to Denmark; the United States shipped 88,903 tons.

It will be seen that the United Kingdom has been the chief source of Denmark's coal imports, and about 90 per cent. of the coke imported has also come from the United Kingdom. Germany has been next in importance in supplying coal. Especially during the last years Germany has sent a large amount of coal to Denmark to help pay for the foodstuffs from Denmark. The German coal in a measure also aided in keeping up the exchange rates between these two countries.

COAL PRODUCTION IN INDIA

Indian coal production increased over 2,500,000 tons in 1918. With the exception of Assam and Hyderabad, where the output decreased by about 7,000 and 21,000 tons respectively, all Indian provinces shared in this increase. The pit's mouth value increased largely everywhere, except in the North-West Frontier Province, where it fell from 18s. 8d. to 5s. 4d. per ton, but as the output in the latter province was only 240 tons the figure has no statistical value. In the fields of Bengal and Bihar and Orissa the rates of increase were respectively 1s. 3-9-16d. and 8-5-16d. per ton. The following table shows the output of coal in the various provinces in 1917 and 1918:—

Province	1917 Tons	1918 Tons	Average price per ton Rs. A. P.
Assam	301,480	294,484	7 2 8
Baluchistan	40,785	43,125	14 13 8
Bengal	4,631,571	5,302,295	4 14 10
Bihar and Orissa	11,932,419	13,679,080	3 14 3.
Central India	198,407	199,975	4 8 1
Central Provinces	371,498	481,470	5 9 0
Hyderabad	680,629	659,122	—
North-West Frontier Province.....	215	240	4 0 0
Punjab	49,869	50,418	11 5 0
Rajputana	6,045	11,334	6 5 5
Total	18,212,918	20,721,543	—

Exports of coal fell from 407,078 tons in 1917 to 74,335 tons in 1918. Imports of coal, coke, etc., on the other hand, rose from 46,455 tons to 67,441 tons.

The average number of persons employed daily in the coalfields, 176,269, increased by 24,000, or more than 14 per cent. The average output per person employed was practically the same as in the preceding year, viz., 103.30 tons, as against 108.88. The total number of fatal accidents was 212, corresponding to a death rate of 1.11 per thousand.

In 1918, 20,321,942 tons of coal were raised from the Gondwana coal fields and 399,601 tons from the tertiary coal fields; 52.85 per cent. of the entire output came from the Jharia coal field, and 30.74 per cent. from the Raniganj coal field.

The exports included 51,935 tons, shipped to Ceylon; and 10,279 tons, sent to the Straits Settlements and Labuan. The imports included: Australia and New Zealand, 4,587 tons; Natal, 13,020 tons; Portuguese East Africa, 22,680 tons; and the United Kingdom, 7,850 tons. This does not include government stores, which totalled 13,095 tons.

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COAL SITUATION IN AUSTRALIA

The average yearly output of coal in Australia, according to an official report from United States Consul-General Sammons at Melbourne, is between 10,000,000 and 11,000,000 tons, of which quantity over 9,000,000 tons are raised in New South Wales, the only Australian state producing any large quantity of coal. Of this New South Wales production about 5,500,000 tons are used locally, about 2,500,000 tons shipped to the other Australian States, and the balance shipped to New Zealand and overseas ports.

The following table will show the output from the several states of the Commonwealth from 1913 to 1918:

Years	New South Wales Tons	Victoria Tons	Queens- land Tons	Western Australia Tons	Tasmania Tons	Total Tons
1913.....	10,414,165	596,896	1,037,944	313,818	55,043	12,417,866
1914.....	10,390,622	620,251	1,053,990	319,210	60,794	12,444,867
1915.....	9,449,008	590,968	1,024,273	286,666	64,536	11,415,451
1916.....	8,127,161	420,098	907,727	301,526	55,575	9,812,087
1917.....	8,292,867	466,220	1,048,473	326,550	63,412	10,197,522
1918.....	9,063,176	505,734	983,193	337,039	60,163	10,949,305

In 1919 New South Wales's output was 8,631,554 tons, but data for the other states are not yet available.

At the present time what are known as the great coal seams are being worked extensively in the West Maitland district of New South Wales. This stretch of country, covering a distance of 15 miles, is now the most important coal-mining district in Australasia. One colliery (the Sydney Harbor) possesses special interest from the circumstance that its workings are among the deepest in the world. Practically all the Australian collieries are held by British and Australian capital.

Notwithstanding the large output of coal in Australia, prior to the war considerable quantities of coke were imported from abroad. Latterly, however, the imports have been negligible. The domestic industry has made considerable progress, and in 1917 New South Wales and Queensland produced 468,986 tons, all of which was used locally. It is estimated that the output has increased materially since then.

In 1913 Australia's consumption of coal amounted to 8,675,940 tons; in 1914, to 9,967,933 tons; in 1915, to 9,257,172 tons; in 1916, to 8,277,283 tons; in 1917, to 9,051,111 tons; and in 1918, to 8,216,399 tons.

The export of coal from the Commonwealth of Australia is practically confined to New South Wales, the chief port of shipment being Newcastle, the other states not producing sufficient for their own consumption. The total quantity of Australian coal (exclusive of bunker coal) exported from Australia to other countries in 1918 was 488,417 tons, of which amount 487,647 tons were exported from Sydney and Newcastle, New South Wales, the principal destinations and proportions shipped to each, being:

Countries	Tons	Countries	Tons
Chile	4,295	Java	11,953
Society Islands	13,952	Papua	3,246
Straits Settlements	11,819	New Caledonia	22,280
Fiji	45,616	Gilbert and Ellice Islands ..	2,105
New Zealand	198,563	Solomon Islands	2,871
Hawaii	763	Pleasant Island	1,140
India	21,023		

The quantity of bunker coal taken from New South Wales by oversea vessels was about 495,000 tons.

Newcastle and Sydney, in the State of New South Wales, are both coal producing and loading centers, and every facility is available for the delivery of bunkers. Competition in the Newcastle district is especially keen on account of the various qualities of coal produced and the varying cost of production.

The brown-coal beds of Victoria have an approximate area of 1,200 square miles and are reported to be the thickest known. It is estimated that the brown coal in Victoria amounts to 30,000,000,000 tons. These deposits are practically untouched, though various schemes are on foot for their development if a market can be found for the lignite or if it can be utilized for the production of electricity.

Compared with the preceding year, coal production in New South Wales in 1919 declined 431,622 gross tons. Comparative figures were as follows:

	1919 Gross tons	1918 Gross tons
Northern district	5,629,253	5,966,926
Southern district	1,826,574	1,984,578
Western District	1,175,727	1,111,672
	<u>8,631,554</u>	<u>9,063,176</u>

COAL PRODUCTION AND CONSUMPTION IN NEW ZEALAND

Coal production in New Zealand has been declining since 1917. Including about 200,000 gross tons of lignite, the yearly output since 1913 has been as follows: 1,888,005 gross tons in 1913; 2,275,614 in 1914; 2,208,624 in 1915; 2,257,135 in 1916; 2,068,419 in 1917 and 2,034,250 gross tons in 1918. During the first seven months of 1919 production dropped to 145,609 gross tons.

The normal annual consumption is approximately 2,500,000 gross tons; about 15 per cent. of this is imported. During 1914, New Zealand imported 518,070 gross tons; in 1915, 353,471; in 1916, 293,956; in 1917, 291,597; in 1918, 255,332 and in the first eleven months of 1919, 343,977 gross tons. An occasional cargo is received from the United States, but the chief source of foreign supply is Australia. Exports vary between 225,000 and 330,000 tons per annum. The greater part of this is bunker fuel for the United Kingdom.

THE COAL TRADE OF JAPAN

According to an estimate of the mining bureau of the Department of Agriculture and Commerce at Tokyo, based mainly on coal veins over two feet thick, and generally lying not more than 2,000 feet below drainage level, the available coal deposits of Japan amount to about 822,000,000 metric tons (metric ton=2,204 pounds). In addition, it is judged that approximately 2,940,000,000 metric tons, which lie at greater depths, can be mined if highly efficient methods are used.

The annual production of coal and lignite from 1913 to 1918, inclusive, was as follows:

THE COAL TRADE

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Years	Coal:			Lignite.
	Metric tons Japan proper.	Long tons Taiwan.	Long tons Karaluto.	Japan proper, Metric tons only.
1913	21,315,962	319,371	83	99,631
1914	22,293,419	342,787	14,653	105,196
1915	20,490,747	379,368	27,626	100,107
1916	22,901,580	509,887	37,060	108,718
1917	26,361,420	673,008	57,830	152,896
1918	28,029,425	801,520	104,695	173,396

It is estimated that the number of metric tons of coal mined in Japan in 1919 was 30,832,325.

Coal and coke imports in long tons for 1916-19 were as follows:

Year.	Coal, Tons.	Coke, Tons.
1916	551,696	2,576
1917	707,421	51,451
1918	761,698	77,029
1919	699,646	26,111

China and Kwantung Province are the principal sources of imports for coal. The gross tonnages drawn from those sources were:

Year.	China, Tons.	Kwantung Province, Tons.
1916	312,149	109,683
1917	485,693	124,107
1918	534,512	135,388
1919	463,298	124,427

Exports have been on a diminishing scale since 1916, as appears in the next table.

Year.	*Coal, Gross tons.	Coke, Gross tons.
1916	2,443,569	3,585
1917	2,325,246	3,326
1918	1,854,231	7,119
1919	1,686,621	1,742

* Lump coal only.

In 1919, the British Straits Settlements took 329,987 gross tons of lump coal; Hongkong, 370,601, and Philippine Islands, 259,201 gross tons.

Coal consumption in Japan during the past two years was reported as follows:

Industries.	1918 Gross tons.	1919 Gross tons.	Industries.	1918 Gross tons.	1919 Gross tons.
Railways	3,668,000	3,896,000	Shipbuilding	523,000	576,000
Iron Manufacturing...	2,358,000	1,183,000	Mining	575,000	506,000
Spinning	1,726,000	1,730,000	Cement production...	452,000	493,000
Navy and War Depart- ments	1,075,000	1,118,000	Flour milling and sugar refining.....	367,000	369,000
Electric power.....	952,000	1,173,000	Ceramics and glass manufacturing	451,000	478,000
Salt production.....	607,000	878,000	Brick and tile manu- facturing	298,000	300,000
Gas production.....	799,000	821,000	Rubber and celluloid manufacturing	112,000	119,000
Coke production.....	739,000	816,000	Others	3,931,000	4,380,000
Weaving and filature work	698,000	713,000			
Metal refining.....	645,000	492,000			
Fertilizer and drug manufacturing	609,000	616,000			
Paper manufacturing..	570,000	617,000	Total	21,252,000	22,322,000

The number of employees working for coal-mining companies was as follows: 1915, 193,142; 1916, 197,907; 1917, 250,144; 1918, 287,159. These employees in 1918 were divided as follows:

	Male.	Female.
Under 14 years of age.....	252	202
From 14 to 15 years of age.....	1,956	1,542
From 15 to 20 years of age.....	33,910	20,997
Over 20 years of age.....	170,776	57,524
Total	206,894	80,265

The capital invested in coal mining in Japan, and the number of companies, from 1914 to 1918, inclusive, were as follows:

Years.	Number of companies.	Subscribed capital.	Paid-up capital.
1914	113	\$38,658,650	\$31,508,328
1915	116	38,115,285	31,154,705
1916	118	39,111,288	31,320,207
1917	146	55,580,133	43,210,703
1918	203	95,381,496	61,479,980

In 1916 first lump coal brought 10 yen (\$4.99) a long ton at the large dealers. In 1918 this had increased to 22 yen (\$10.97) a long ton. All other grades had increased in proportion. These prices show a great increase over the 1913 price of 7.50 yen (\$3.74) for first lump per long ton at the dealers. In March, 1920, the average prices per long ton of various grades of coal, c. i. f. Yokohama, at the large dealers were as follows: Lump, \$17.60; unscreened, \$15.11; first dust, \$12.96. Coke was selling for \$32.40 per long ton in the same month. One of the reasons for the high c. i. f. prices of coal was the high freight charges.

COAL TRADE OF CEYLON

Ceylon, which produces no coal, and, exclusive of railways, uses only about 25,000 gross tons a year, is nevertheless an important factor in the coal bunkering trade, which centers at Colombo. Imports in gross tons during the past nine years have been as follows:

Years	Total imports tons	From United Kingdom tons	From British India tons	From British South Africa tons	From Mozambique tons	From Australia tons	From Japan tons
1911	665,047	260,289	395,578	2,853	5,507	....	520
1912	885,661	278,466	555,628	9,967	....	7,141	32,017
1913	744,529	234,234	364,020	21,370	7,139	602	94,317
1914	598,957	263,054	260,575	42,406	6,815	....	10,340
1915	641,586	57,325	451,962	45,475	....	21,646	17,516
1916	575,677	39,256	446,437	5,812	20,574	....	19,776
1917	311,696	17,417	227,261	11,120	16,555	1,654	8,201
1918	218,350	187	71,044	88,923	....	4,598	10,537
1919	686,077	2,104	488,696	60,947	43,258	19,270	23,602

Government purchases in British India for the railways during the same period were as follows: 1911, 73,617 gross tons; 1912, 72,143; 1913, 52,093; 1914, 72,638; 1915, 87,497; 1916, 120,367; 1917, 84,851; 1918, 55,605 and 1919, 50,045 tons.

The average declared value of the coal imports was as follows:

Imported from	Average declared value per gross ton								
	1911	1912	1913	1914	1915	1916	1917	1918	1919
United Kingdom.....	\$6.88	\$7.14	\$7.27	\$7.80	\$8.58	\$9.01	\$11.05	\$49.00	\$24.32
British India.....	4.45	4.54	4.84	4.96	5.68	8.26	10.49	17.12	15.41
Natal.....	6.48	5.71	7.73	5.76	6.85	9.98	11.87	18.41	15.48
Mozambique.....	4.87	.....	4.87	4.87	....	8.55	7.45	....	45.98
Western Australia.....	.....	3.17	....	....	....	....	....	6.49	17.84
New South Wales.....	....	....	....	....	6.72	....	8.11	....	20.76
South Australia.....	....	....	....	....	....	....	....	19.47	24.58
Japan.....	4.90	6.00	5.43	6.71	6.93	10.19	9.80	27.24	30.14
Government coal.....	3.25	3.69	4.22	4.36	4.10	4.83	6.52	2.88	2.94

EXPORTS AND IMPORTS OF SOUTH AFRICA

Coal exports from South Africa last year totaled 1,092,010 net tons, or only 116,376 tons less than in 1918, according to the figures shown in the annual trade shipping report of the Department of Commerce and Excise (South Africa). Exports during the prewar year of 1913, were only 856,397 tons, although that represented a marked gain over the movement in 1910, viz., 138,694 tons. Bunker tonnages rose from 1,451,751 tons in 1913 to 1,433,493 last year.

Exports of coal by countries of destination during 1918 and 1919 were as follows:

Countries of destination	1919	1918
	Quantity (2,000 lb.)	Quantity (2,000 lb.)
United Kingdom.....	6,283	23,271
India.....	43,361	55,771
Ceylon.....	170,959	193,964
Australia, (commonwealth of)....	40,017	21
New Zealand, Dominion of.....	6,093	.....
Aden.....	531,793	253,439
Straits Settlements.....	44,503	25,275
Ascension Island.....	34	.....
British E. Africa.....	30,677	24,969
Egypt.....	92,717	123,815
South-West Africa Protectorate..	14	1,474
British W. Africa.....	.....	2,277
Mauritius.....	14,676	54,219
Seychelles Islands.....	.....	224
St. Helena.....	112	86
Zanzibar.....	17,587	44,035
Falkland Islands.....	18,712	13,371
France.....	133	.....
Madagascar.....	18,104	21,645
Other French Possessions.....	61,114	49,212
Greece.....	13,634	52,279
Holland.....	5	.....
Dutch East India Islands.....	4,992	.....
Italian Possessions.....	6,695	963
Portuguese E. Africa.....	29,552	27,961
“ W. Africa.....	27,466	19,941
Japan.....	.....	.....
United States of America.....	.....	4
Philippine Islands.....	.....	3,488
Argentine Republic.....	59,112	130,793
Brazil.....	2,064	8

THE COAL TRADE

Chili .....	.....	2,800
Uruguay	1,601	83,081
Total	1,092,010	1,208,386
Bunkers	1,433,493	1,290,152

In addition, 1,223 tons of coke and patent fuel were exported as compared with 764 tons in 1918. Southern Rhodesia, which is not included in the above, exported 92,173 tons of coal in 1919, as compared with 93,297 tons in 1918, the destination of the exports being as follows: Belgian Congo, 30,931 tons (39,474 tons in 1918); se East Africa, 21,587 tons, (20,171 tons); Union of South Africa, 9,571 tons (10,011 tons); Northern Rhodesia, 30,084 tons (23,641 tons).

In 1919 the Union of South Africa imported 2,067 tons of coal, 6,783 tons of coke—against 23,158 tons in 1918 and 22 tons of patent fuel. The greater part came from the United Kingdom, but 511 tons of coal were imported from the United States. Southern Rhodesia imported 1,832 tons of coal and 238 tons of coke and patent fuel, mainly South African produce. Northern Rhodesia imported 40,383 tons of South African coal as against 34,813 tons in 1918.

The exports of coal from South Africa in 1919 according to port of shipment, were as follows: Cape Town, 18,637 tons; Durban, 484,905 tons; other Union ports, 15 tons; Delagoa Bay, 588,453 tons; Beira, Feira and Overland, 52,518 tons. The duty on imported coal and patent fuel is 3s. per short ton, and on coke, 1s. per short ton.

COAL TRADE OF UNION OF SOUTH AFRICA

Exports of coal from the Union of South Africa in 1919 approximated 1,208,000 net tons, as compared with 856,000 tons in 1913. Coal sold for bunkering last year totaled 1,276,000 tons, as compared with 1,452,000 tons in 1913.

Official returns of the output during the past two years show the following:

Province	Coal sold		Value per ton at pit's mouth			
	1918 Tons	1919 Tons	1918 s. d.	1919 s. d.		
Transvaal	6,438,961	6,622,313	5	0.84	5	1.40
Cape	4,654	4,759	15	3.89	15	8.80
Orange Free State.....	826,577	838,059	5	6.70	5	6.25
Natal	2,607,133	2,796,728	10	5.10	10	8.27

The amount sorted out, which should be added to the sales, varies from 4 to 20 per cent. As compared with 1913, when the sales amounted to 8,801,216 tons, the selling price of Transvaal coal has increased by 9d. per ton, Orange Free State coal by about 1d. per ton, and in the case of Natal coal the increase is 4s. 7d. In December, 1919, 68 collieries were producing coal in the Union—33 in the Transvaal, 27 in Natal, four in the Orange Free State, and four in the Cape.

COAL PRODUCED PER MAN EMPLOYED—1918

State	Days Worked	Average Tonnage		State	Days Worked	Average Tonnage	
		Per Year	Per Day			Per Year	Per Day
Alabama	278	732	2.63	New Mexico	301	982	3.26
Arkansas	204	560	2.75	North Dakota ...	229	869	3.79
Colorado	255	857	3.36	Ohio	223	946	4.24
Georgia	258	...	...	Oklahoma	228	570	2.50
Illinois	238	1,039	4.37	Oregon	292	...	...

— Tonnage —				— Tonnage —			
State	Days Worked	Yearly	Daily	State	Days Worked	Yearly	Daily
Indiana	227	1,010	4.45	Pennsylvania (bit.)	269	1,024	3.81
Iowa	245	615	2.51	Tennessee	265	639	2.41
Kansas	234	709	3.03	Texas	262	574	2.19
Kentucky	230	804	3.50	Utah	258	1,235	4.79
Maryland	261	808	3.10	Virginia	277	935	3.38
Michigan	237	573	2.42	Washington	275	799	2.91
Missouri	235	591	2.51	West Virginia	238	1,005	4.22
Montana	264	994	3.77	Wyoming	268	1,249	4.66

COMPARATIVE WAR-TIME PRICES ON COAL

American coal prices advanced less under the stimulus of war-time demand than did those of Great Britain, Germany, Russia, Italy, Japan and Denmark. According to a comprehensive study of war-time commodity prices made by the Bureau of Foreign and Domestic Commerce, while coal at Manchester, England, for example, was rising from \$3.80 to \$6.30, Pittsburgh coal moved upward from \$1.27 to \$2.46; while coal at Genoa jumped from \$6.80 to \$45.74, Cincinnati wholesale prices on Pittsburgh coal went from \$2.20 to \$4. Even in Japan, where production costs are reputed so low because of Oriental wage scales, coal at Yokohama jumped from \$4.65 to \$17.95, while the Pittsburgh advance in the same period was from \$1.24 to \$2.46.

Compared to other commodities at home, fuel was a laggard in the matter of increases and it was not until 1918 that the general level was above the level for all commodities. In summarizing its investigations with respect to war-time advances in the United States, the Bureau said:

"1. Immediately after the outbreak of war the general price level jumped up four points, held that level for two months, and then fell back almost to the level of July, 1914. This flurry was caused mainly by a speculative advance and relapse in the prices of sugar, grains and hard fibres.

"2. The sustained rise of prices did not begin in the United States until the autumn of 1915, more than a year after the war began in Europe.

GENERAL RISE RAPID

"3. Once started, the rise was extraordinarily rapid. By August, 1916, prices stood 25 per cent, above the pre-war level; by February, 1917, 50 per cent.; by May, 1917, 75 per cent., and by September, 1918, 100 per cent. above it. How exceptional such an advance is, appears when it is compared with the great increase of prices between 1897 and 1907. People spoke freely of a price revolution in those years, and with justice, for the increase amounted to 44 per cent. of the 1897 price level. Yet there were periods of less than 11 months in 1916-17 when the rise exceeded that of those 11 years, 1897 to 1907.

"4. The periods of most rapid rise came in the winter of 1915-16, when European war orders began to have a pronounced effect upon American business; the autumn of 1916, when steel prices shot up at an extraordinary rate; and above all, the spring of 1917, when the United States entered the war.

"5. This last and greatest advance was cut short July, 1917, and for a full year the price level was kept fairly stable. Business conditions and the huge war orders which the government was placing favored a further advance of prices. It is difficult to explain the checking of the rise on any other ground than the substantial success of the government's efforts to control prices through the Food and the Fuel Administrations, the purchasing bureaus of the War and Navy Departments, and the price-fixing committee of the War Industries Board.

"6. The price level began to move up again, though much more slowly than before, in the last half of 1918.

"7. The end of the fighting in November did not produce an immediate recession of the price level as a whole. Though many individual commodities declined, the index number of *All commodities* advanced in December to 203, the highest point attained in the six years covered.

"The index numbers of the seven groups show that all seven participated in the rise, though in very different degrees. Food followed the movements of *All commodities* more closely than the other groups, for the reason that it had the heaviest aggregate weight, and therefore exercised most influence upon the grand average. Next in agreement with *All commodities* comes *Clothing*, then, in order, *Fuel*, *Building materials*, *Rubber*, *paper*, and *fibers*—the last three of which lagged behind *All commodities*—*Chemicals* and *Metals*, which rose much higher than the average.

"The lagging of fuel prices is due in part to the control exercised by the Fuel Administration, but also in part to the fact that the bulk of the coal mined is sold on the basis of yearly contract prices set in April. Of course, that technical fact keeps the prices realized for coal behind the general level in a period of continuously advancing markets. By 1918, however, fuel prices stood above *All commodities*. Building material prices lagged more decidedly than fuel prices because the construction of new buildings is discouraged more than most kinds of business by high cost, and because the War Industries Board sought to check the erection of structures not required by the war program. The most laggard of all the groups, however, was the miscellaneous one, in which rubber, paper, and hard fibers are put together, the fibers indeed, rose more than *All commodities* and so did paper in 1917, at least. But rubber, which dominated the group by its heavier weight, was kept relatively low in price by the large supplies of crude rubber coming from plantations and by the cutting off of sales to Germany and Austria.

HOW PRICES VARIED IN DIFFERENT COUNTRIES

"In comparison with the basic similarity, the difference between the price fluctuations that occurred in various countries are matters of secondary importance; yet they merit attention. In England, France, Italy, Germany, Russia, Denmark, Sweden and Norway, and even in the distant British colonies of Canada and Australia, a sustained advance began before the end of 1914. India was definitely drawn into the price revolution early in 1915, Argentina and the United States in the latter part of 1915, and Japan early in 1916. Regarding the ultimate degree of the advance, little can be said until figures for 1917 and 1918 become available for all countries. But there is present evidence that in 1915 food prices at least rose more violently in Austria than elsewhere; that French prices advanced more than British prices, and Italian more than French; that at least up to the end of 1916 the Scandinavian neutrals were affected in about the same degree as the European belligerents; and that the rise in other parts of the world was less extreme than in Europe.

"The American price fluctuations were distinctly less violent than the fluctuations in England, not to speak of the belligerents and neutrals in Europe. In Canada also the price level was also higher than in the United States, except for the first few months of American participation in the war. Australian prices stood higher than ours in 1914-16, but lower in 1917-18. Japanese prices on the contrary, lagged behind American prices until July, 1918, when they seem to have taken the lead."

The summarization of the coal price comparisons made by the Bureau is the following tables:

GREAT BRITAIN

Wholesale Prices of Bituminous Coal, Semi-Bituminous, Anthracite and Coke in Great Britain as Compared with United States

	"First Series"			"Second Series"			Semi-Bituminous		Coke		Anthracite Swansea New York
	Manchester	Pittsburgh	Bituminous	Manchester	Detroit	Cardiff	Norfolk	At Works United King.	At Oven U. S.		
Year 1913.....	\$3.82	\$1.27	\$2.57	\$2.57	\$1.22	\$2.76	\$2.68	\$5.05	\$2.71	\$5.46	\$5.06
1st quarter.....	3.80	1.28	2.53	2.53	1.26	2.68	2.68	5.05	2.71	5.46	5.20
2d quarter.....	3.80	1.24	2.55	2.55	1.13	3.10	2.68	4.83	2.70	5.47	4.79
3d quarter.....	3.80	1.24	2.61	2.61	1.19	2.29	2.68	4.53	2.62	5.21	5.07
4th quarter.....	3.87	1.32	2.61	2.61	1.30	2.35	2.68	4.23	2.39	5.35	5.30
Year 1914.....	3.83	1.17	2.62	2.62	1.12	2.22	2.68	4.00	2.07	5.24	5.06
1st quarter.....	3.91	1.24	2.61	2.61	1.13	2.43	2.68	4.18	2.21	5.52	5.20
2d quarter.....	3.80	1.22	2.73	2.73	1.15	2.44	2.68	3.91	2.15	5.11	4.78
3d quarter.....	3.84	1.12	2.69	2.69	1.12	2.33	2.68	3.98	2.04	4.99	5.06
4th quarter.....	3.77	1.09	2.53	2.53	1.09	1.93	2.68	3.91	1.90	5.35	5.19
Year 1915.....	4.47	1.04	3.50	3.50	1.20	3.81	2.54	6.22	2.16	6.48	5.05
1st quarter.....	4.02	1.11	3.05	3.05	1.09	3.47	2.54	4.90	1.91	5.56	5.19
2d quarter.....	4.45	.99	3.55	3.55	1.07	4.63	2.54	6.73	1.93	5.27	4.76
3d quarter.....	4.71	.84	3.70	3.70	1.08	4.42	2.54	6.97	2.07	5.57	5.06
4th quarter.....	4.74	1.10	3.74	3.74	1.16	2.64	2.54	6.52	2.74	5.52	5.19
Year 1916.....	4.85	2.07	4.14	4.14	1.88	5.42	3.23	10.23	4.27	7.09	5.29
1st quarter.....	4.78	1.43	3.87	3.87	1.23	3.92	2.68	7.79	3.50	6.61	5.28
2d quarter.....	4.83	1.41	4.23	4.23	1.22	3.52	2.68	10.66	3.17	6.81	5.15
3d quarter.....	4.89	1.41	4.30	4.30	1.20	3.34	3.06	11.40	2.99	7.05	5.30
4th quarter.....	4.89	4.02	4.30	4.30	3.75	5.21	4.31	11.04	7.40	7.26	5.43
Year 1917.....	4.99	3.58	4.39	4.39	3.30	4.28	4.85	10.46	9.52	6.73	5.62
1st quarter.....	4.89	4.79	4.30	4.30	4.30	3.77	5.65	10.87	10.39	6.26	5.43
2d quarter.....	4.89	4.36	4.30	4.30	3.75	3.71	6.10	10.32	9.44	6.26	5.29
3d quarter.....	4.89	2.84	4.30	4.30	2.74	4.89	3.86	10.32	11.97	7.30	5.76
4th quarter.....	5.26	2.31	4.65	4.65	2.37	4.67	3.78	10.32	6.25	7.30	6.00
Year 1918.....	5.84	2.40	4.93	4.93	2.54	5.67	4.00	8.70	6.25	8.06	6.51
1st quarter.....	5.52	2.46	4.62	4.62	2.52	4.85	3.94	9.58	6.25	7.30	6.24
2d quarter.....	5.62	2.43	4.41	4.41	2.49	5.21	3.78	8.14	6.25	7.30	6.04
3d quarter.....	5.62	2.36	5.27	5.27	2.60	6.05	4.14	8.91	6.25	8.64	6.44
4th quarter.....	6.30	2.36	5.52	5.52	2.57	6.19	4.14	8.14	6.25	9.00	7.31

THE COAL TRADE

GERMANY

Wholesale Prices of Bituminous Coal, Semi-bituminous Coal and Coke in Germany as Compared with United States

	Bit. Coal—Pitts.		Semi-Bituminous		Coke	
	Berlin	Cincinnati	Berlin	Norfolk	Berlin	Connells.
Year 1913.....	\$5.72	\$2.20	\$4.94	\$2.68	\$7.46	\$3.03
1st quarter.....	5.72	2.20	4.94	2.68	7.34	3.52
2d quarter.....	5.72	2.20	4.94	2.68	7.50	3.02
3d quarter.....	5.72	2.20	4.94	2.68	7.50	2.93
4th quarter.....	5.72	2.20	4.94	2.68	7.50	2.67
Year 1914.....	6.00	2.20	4.94	2.68	6.97	2.32
1st quarter.....	5.72	2.20	4.94	2.68	7.50	2.47
2d quarter.....	5.72	2.20	4.94	2.68	6.79	2.41
3d quarter.....	6.00	2.20	4.94	2.68	6.79	2.28
4th quarter.....	6.55	2.20	4.94	2.68	6.79	2.12
Year 1915.....	6.55	2.20	5.31	2.54	6.97	2.42
1st quarter.....	6.55	2.20	5.18	2.54	6.79	2.13
2d quarter.....	6.55	2.20	5.30	2.54	7.03	2.16
3d quarter.....	6.55	2.20	5.34	2.54	7.03	2.32
4th quarter.....	6.55	2.20	5.42	2.54	7.03	3.07

JAPAN

Wholesale Prices of Bituminous Coal in Japan as Compared with United States

Yokohama Pittsburgh			Yokohama Pittsburgh		
Year 1913.....	\$4.72	\$1.27	Year 1916.....	\$5.38	\$2.07
1st quarter.....	4.65	1.23	1st quarter.....	4.49	1.43
2d quarter.....	4.74	1.24	2d quarter.....	4.74	1.41
3d quarter.....	4.74	1.24	3d quarter.....	5.07	1.41
4th quarter.....	4.74	1.32	4th quarter.....	7.23	4.02
Year 1914.....	4.93	1.17	Year 1917.....	11.63	3.63
1st quarter.....	4.90	1.24	1st quarter.....	8.06	4.79
2d quarter.....	4.99	1.22	2d quarter.....	9.39	4.36
3d quarter.....	4.99	1.12	3d quarter.....	13.79	2.84
4th quarter.....	4.82	1.09	4th quarter.....	15.29	2.31
Year 1915.....	4.63	1.04	Year 1918.....	....	2.40
1st quarter.....	4.74	1.11	1st quarter.....	17.11	2.46
2d quarter.....	4.74	.99	2d quarter.....	17.95	2.43
3d quarter.....	4.57	.94	3d quarter.....	17.78	2.36
4th quarter.....	4.49	1.10	4th quarter.....	....	2.36

DENMARK

Wholesale Prices of Anthracite Coal in Denmark as Compared with United States

Copenhagen New York			Copenhagen New York		
Year 1913.....	\$5.45	\$4.74	Year 1916.....	\$16.68	\$4.98
1st quarter.....	5.66	4.87	1st quarter.....	11.84	4.90
2d quarter.....	5.42	4.50	2d quarter.....	18.23	4.85
3d quarter.....	5.35	4.75	3d quarter.....	18.96	5.01
4th quarter.....	5.35	4.87	4th quarter.....	17.68	5.12
Year 1914.....	5.13	4.74	Year 1917.....	43.30	5.30
1st quarter.....	4.98	4.87	1st quarter.....	21.64	5.12
2d quarter.....	4.89	4.49	2d quarter.....	62.00	5.01
3d quarter.....	4.86	4.76	3d quarter.....	47.68	5.40
4th quarter.....	6.56	4.86	4th quarter.....	39.92	5.67
Year 1915.....	9.19	4.76	Year 1918.....	....	6.13
1st quarter.....	8.10	4.85	1st quarter.....	36.66	6.13
2d quarter.....	10.21	4.43	2d quarter.....	39.14	5.88
3d quarter.....	9.31	4.74	3d quarter.....	38.00	6.07
4th quarter.....	9.07	4.83	4th quarter.....	42.33	6.84

ITALY

Wholesale Prices of Bituminous Coal, Semi-bituminous Coal and Coke in Italy, Compared with the United States

	Bit. Coal—Pittsburgh		Semi-Bituminous		Coke	
	Genoa	Cincinnati	Genoa	Norfolk	Genoa	At Ovens U. S.
Year 1913.....	\$6.90	\$2.20	\$7.37	\$2.68	\$10.50	\$2.44
1st quarter.....	7.04	2.20	7.54	2.68	10.58	3.10
2d quarter.....	8.81	2.20	7.38	2.68	11.10	2.23
3d quarter.....	6.62	2.20	7.29	2.68	10.49	2.44
4th quarter.....	6.55	2.20	7.25	2.68	9.84	1.99

Year	Bit. Coal—Pittsburgh		Semi-Bituminous		At Owens	
	Genoa	Cincinnati	Genoa	Norfolk	Genoa	U. S.
Year 1914.....	7.00	2.20	7.66	2.68	10.72	1.81
1st quarter.....	5.81	2.20	6.50	2.68	9.49	1.91
2d quarter.....	5.74	2.20	6.53	2.68	9.09	1.91
3d quarter.....	8.09	2.20	8.81	2.68	12.30	1.80
4th quarter.....	8.36	2.20	8.78	2.68	11.74	1.62
Year 1915.....	16.76	2.20	18.38	2.54	26.13	1.79
1st quarter.....	14.41	2.20	14.73	2.54	17.05	1.59
2d quarter.....	16.41	2.20	16.60	2.54	20.23	1.63
3d quarter.....	15.38	2.20	16.05	2.54	22.84	1.70
4th quarter.....	22.87	2.20	26.15	2.54	44.39	2.23
Year 1916.....	40.67	2.68	42.38	3.33	48.00	3.25
1st quarter.....	40.06	2.20	40.79	2.68	55.01	2.83
2d quarter.....	42.01	2.20	44.78	2.68	53.41	2.61
3d quarter.....	34.87	2.30	35.38	3.06	46.64	2.67
4th quarter.....	45.74	4.00	48.57	4.91	37.64	4.88

RUSSIA

Wholesale Prices of Bituminous Coal and Anthracite in Russia as Compared with United States

Year	Bituminous Coal		Anthracite Coal	
	Petrograd	Pittsburgh	Karkov	New York
Year 1913.....	\$3.42	\$1.27	\$4.84	\$4.74
1st quarter.....	2.85	1.28	3.99	4.87
2d quarter.....	3.13	1.24	4.27	4.50
3d quarter.....	3.42	1.24	5.41	4.75
4th quarter.....	3.70	1.32	5.98	4.87
Year 1914.....	3.70	1.17	5.70	4.74
1st quarter.....	3.42	1.24	5.70	4.87
2d quarter.....	3.42	1.22	5.70	4.49
3d quarter.....	3.70	1.12	5.70	4.76
4th quarter.....	3.99	1.09	5.98	4.86
Year 1915.....	4.56	1.04	7.12	4.76
1st quarter.....	3.99	1.11	5.98	4.85
2d quarter.....	4.56	.99	6.84	4.48
3d quarter.....	4.84	.94	8.26	4.74
4th quarter.....	4.56	1.10	8.83	4.83
Year 1916.....	4.84	2.07	7.68	4.98
1st quarter.....	4.27	1.43	7.41	4.90
2d quarter.....	4.27	1.41	7.41	4.85
3d quarter.....	5.13	1.41	8.26	5.01
4th quarter.....	5.41	4.02	8.26	5.12

The following tables, based upon the foregoing official summaries, show the yearly averages on specific coals:

SEMI-BITUMINOUS

Year	At—	Norfolk	Cardiff	Genoa	Berlin
1913		\$2.68	\$2.76	\$7.37	\$4.94
1914		2.68	2.22	7.66	4.94
1915		2.54	3.81	13.38	5.31
1916		3.33	5.42	42.88	...
1917		4.85	4.28	...	...
1918		4.00	5.67	...	...

BITUMINOUS—PITTSBURGH GRADE

Year	At—	Cincinnati	Berlin	Japan	Genoa	Petrograd	Manchester
1913		\$2.20	...	...	...	...	...
1914		1.27*	\$5.72	\$4.72	\$6.80	\$3.42	\$3.82
1915		2.20	...	...	...	...	...
1916		1.17*	6.00	4.93	7.00	3.70	3.83
1917		2.20	...	...	...	...	...
1918		1.04*	6.55	4.63	16.76	4.56	4.47
1919		2.68	...	...	...	...	...
1920		207*	...	5.38	40.67	4.84	4.85
1921		3.58*	...	11.63	...	...	4.90
1922		2.40	...	...	...	...	5.84

* Pittsburgh.

ANTHRACITE					
Year	At—	New York	Swansea	Karkov	Copenhagen
1913	\$4.74	\$5.46	\$4.84	\$5.45
1914	4.74	5.24	5.70	5.13
1915	4.76	6.43	7.12	9.19
1916	4.98	7.09	7.68	16.68
1917	5.30	6.73	...	43.30
1918	6.13	8.06	...	...

LABOR EMPLOYED IN COAL MINING IN UNITED STATES

State	1915		1916		1917		1918	
	Days Active	Em- ploys	Days Active	Em- ploys	Days Active	Em- ploys	Days Active	Em- ploys
Alabama	223	22,591	262	25,308	273	28,386	278	26,221
Alaska	*	*	179	83	*	*	254	239
Arkansas	149	3,751	184	3,772	187	3,998	204	3,978
California	†285	†36	†188	†18	†173	†17	†240	†15
Colorado	194	12,372	233	13,104	263	14,231	255	14,483
Georgia	197	368	280	411	269	281	258	190
Idaho	†	†	†	†	†	†	†	†
Illinois	179	75,610	198	75,538	243	84,090	238	85,965
Indiana	179	22,777	187	23,965	221	26,528	227	30,376
Iowa	220	15,549	202	14,443	251	14,266	245	13,328
Kansas	184	13,260	204	12,132	216	10,680	234	10,665
Kentucky	186	27,960	208	31,222	214	34,926	230	39,342
Maryland	242	5,664	256	5,633	254	5,919	261	5,568
Michigan	198	2,569	216	2,535	254	2,406	237	2,558
Missouri	186	9,173	207	9,654	240	9,668	235	9,590
Montana	201	3,158	244	3,781	268	4,149	264	4,559
New Mexico	262	4,205	292	4,522	321	4,126	301	4,095
North Carolina	.....	.....	.....	.....	.....	.....	40	50
North Dakota	219	590	244	714	255	821	229	828
Ohio	142	40,053	197	41,394	210	45,509	223	48,450
Oklahoma	167	8,457	178	7,800	211	8,495	228	8,451
Oregon	206	151	236	106	251	104	292	40
Penn. (bit.)	226	174,593	259	168,212	261	173,968	269	174,306
South Dakota	155	35	145	38	154	34	145	21
Tennessee	220	8,948	239	9,211	241	10,421	265	10,694
Texas	233	5,087	218	4,481	263	4,375	262	3,936
Utah	208	3,564	228	3,129	219	3,485	258	4,160
Virginia	235	8,959	272	9,777	273	11,168	277	11,004
Washington	169	4,850	217	4,797	271	5,312	275	5,109
West Virginia	208	75,882	237	78,067	225	88,422	238	89,530
Wyoming	201	7,244	248	7,255	246	7,358	268	7,554
Total (bit.)	203	557,456	230	561,102	243	603,143	249	615,305
Penn (anth.)	230	176,552	253	159,869	285	154,174	293	147,121
Grand total	209	734,008	235	720,971	251	757,317	258	762,426

*Number of men not reported.

†California includes Idaho and Nevada in 1915; Idaho in 1916, 1917, and 1918.

COAL OUTPUT OF PRINCIPAL PRODUCING COUNTRIES

Coal production of the important countries of the world, as tentatively made by the United States Geological Survey, is shown in the following table covering output from 1913 to 1918 in net tons:

THE COAL TRADE

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	1913	1914	1915	1916	1917	1918
United States.....	569,960,219	513,525,477	531,619,487	590,068,175	651,402,574	678,211,904
Great Britain.....	321,922,130	297,698,617	283,560,980	287,140,410	278,319,149	255,040,328
Germany.....	305,714,664	270,594,952	259,130,782	272,069,000	281,429,000 ^c	273,930,000 ^c
Austria-Hungary.....	60,576,201	53,396,400 ^a	52,470,712 ^b	55,482,000 ^b	50,000,000 ^a	50,000,000 ^a
France.....	45,108,544	32,765,156	21,946,000 ^a	23,670,000 ^a	31,847,000 ^a	30,864,000 ^a
Russia.....	35,500,674	36,414,560	31,153,400	28,982,724	30,047,000 ^a	15,229,000
Belgium.....	25,196,869	18,424,000	15,691,000	18,588,000	16,446,000	16,446,000
Japan.....	23,988,282	24,574,000	22,539,000	25,238,000	28,000,000 ^a	30,600,000 ^a
China.....	15,432,200	10,199,200 ^a	19,800,000 ^a	22,000,000 ^a	22,000,000 ^a	22,000,000 ^a
India.....	18,163,866	18,439,975	18,673,984	18,389,372	19,405,550	19,405,550
Canada.....	15,115,089	13,637,529	13,267,023	14,461,678	14,046,759	14,979,213
New South Wales.....	4,663,985	11,644,476	10,582,889	9,102,420	9,200,000	10,160,000
Spain.....	4,731,647	4,877,000	5,155,000	6,160,380	6,519,102	6,519,102
Union of South Africa.....	9,857,351	9,461,674	9,275,083	11,208,402	11,628,870	11,937,682
New Zealand.....	2,115,824	2,548,684	2,473,659	2,527,991	2,316,629	2,316,629
Holland.....	2,084,606	2,191,304	2,438,363	2,950,000	3,326,000	3,326,000
Chile.....	1,862,324	1,198,000	1,290,000	1,563,000	1,563,000	1,563,000
Queensland.....	1,622,467	1,180,825	1,147,186	1,016,654	1,174,280	1,101,176
Mexico.....	882,000 ^a	.....	.....	.....	.....	.....
Turkey.....	706,000 ^a	.....	.....	.....	.....	.....
Italy.....	712,862	839,516	1,045,256	1,438,538	2,080,000 ^a	.....
Victoria.....	668,524	681,644	588,104	463,270	566,007	.....
Indo-China.....	617,912	608,660	708,800	866,000 ^a	.....	.....
Dutch East Indies.....	463,186	626,351	485,183	539,816	910,000 ^a	1,000,000 ^a
Sweden.....	401,199	404,146	467,184	467,262	.....	.....
West Australia.....	361,687	367,526	321,066	337,709	.....	.....
Serbia.....	336,000 ^a	.....	.....	.....	.....	.....
Bulgaria.....	324,000 ^a	.....	.....	.....	.....	.....
Peru.....	301,970	317,923	323,680	351,703	385,802	.....
Roumania.....	267,000 ^a	.....	.....	.....	.....	.....
Rhodesia.....	237,728	381,384	468,934	491,532	.....	.....
Tasmania.....	61,648	68,130	66,000	62,244	.....	.....
Other countries.....	2,560,000 ^a	.....	.....	.....	.....	.....
Approximate total for the world.....	1,478,900,000	1,332,000,000	1,312,000,000	1,401,090,000	1,473,000,000	1,468,000,000
Per cent. of world total produced by United States.....	38.5	38.5	40.5	42.1	44.2	46.2

^a Estimated. ^b Hungarian production estimated at 10,000,000 tons. ^c German lignite production estimated at 97,000,000 tons.

MEN EMPLOYED IN THE COAL MINES OF THE UNITED STATES IN 1918

State	Underground		Surface		Total
	Number	Percentage	Number	Percentage	
Alabama	20,584	78.5	5,637	21.5	26,221
Alaska	170	71.1	69	28.9	239
Arkansas	3,107	78.1	871	21.9	3,978
California and Idaho ..	10	66.7	5	33.3	15
Colorado	11,320	78.2	3,163	21.8	14,483
Georgia	135	71.1	55	28.9	190
Illinois	75,270	87.6	10,695	12.4	85,965
Indiana	23,979	78.9	6,397	21.1	30,376
Iowa	11,774	88.3	1,554	11.7	13,328
Kansas	8,652	81.1	2,013	18.9	10,665
Kentucky	30,323	77.1	9,019	22.9	39,342
Maryland	4,377	78.6	1,191	21.4	5,568
Michigan	2,207	86.3	351	13.7	2,558
Missouri	7,644	79.7	1,946	20.3	9,590
Montana	3,347	73.4	1,212	26.6	4,559
New Mexico	2,971	72.6	1,124	27.4	4,095
North Carolina	35	70.0	15	30.0	50
North Dakota	602	72.7	226	27.3	828
Ohio	39,883	82.3	8,567	17.7	48,450
Oklahoma	7,057	83.5	1,394	16.5	8,451
Oregon	25	62.5	15	37.5	40
Pennsylvania (bit.) ...	140,502	80.6	33,804	19.4	174,306
South Dakota	21	100.0	.....	.....	21
Tennessee	8,198	76.7	2,496	23.3	10,694
Texas	3,391	86.2	545	13.8	3,936
Utah	3,065	73.7	1,095	26.3	4,160
Virginia	8,788	79.9	2,216	20.1	11,004
Washington	3,836	75.1	1,273	24.9	5,109
West Virginia	69,047	77.1	20,483	22.9	89,530
Wyoming	5,932	78.5	1,622	21.5	7,554
Total bituminous..	496,252	80.7	119,053	19.3	615,305
Pennsylvania (anth.)..	101,671	69.1	45,450	30.9	147,121
Grand total	597,923	78.4	164,503	21.6	762,426
Grand total, 1917.....	608,174	80.3	149,143	19.7	757,317
Grand total, 1916.....	590,949	82.0	130,022	18.0	720,971

DETAILS OF NOTABLE MINE ACCIDENTS

Details of notable mine accidents wherein ten or more men lost their lives are shown below:

JANUARY							
Date	Mine	Location	Killed	Date	Mine	Location	Killed
4, 1906.	Coaldale, Coaldale,	W. Va.....	22	25, 1904.	Harwick, Cheswick,	Pa.	179
7, 1892.	No. 11, Krebs,	Okla.....	100	26, 1907.	Lorenz, Penco,	W. Va.	12
10, 1893.	Como, King,	Col.....	24	27, 1891.	Mammoth, Mt. Pleasant,	Pa.	109
10, 1909.	Zeigler, Zeigler,	Ill.	26	29, 1907.	Stuart, Stuart,	W. Va.	84
10, 1914.	Rock Castle, Rock Castle,	Ala.	12	31, 1910.	Primero, Primero,	Col.	75
12, 1909.	Lick Branch, Switchback,	W. Va. 67					
13, 1886.	Almy No. 4, Almy,	Wyo.	13				
18, 1906.	Detroit, Detroit,	W. Va.	18				
21, 1886.	Newburg, Newburg,	W. Va.	39				
23, 1907.	Primero, Primero,	Col.	24				
24, 1884.	Crested Butte, Crested Butte,	Col. 59					
24, 1902.	Lost Creek No. 2, Oskaloosa,	Ia....	20				

FEBRUARY

1, 1910.	Browden, Browden,	Ky.	34
2, 1909.	Short Creek, Short Creek,	Ala....	16
4, 1891.	Spring Mt. No. 1, Jeanesville,	Pa. 13	
4, 1907.	Thomas No. 25, Thomas,	W. Va.	25
5, 1910.	Ernest No. 2, Ernest,	Pa.	12
6, 1915.	Carlisle, Carlisle,	W. Va.	21

Date	Mine	Location	Killed	Date	Mine	Location	Killed
8, 1906.	Parral, Parral, W. Va.	.....	23	10, 1901.	Port Royal No. 2 mine, P. R.	Pa.	19
9, 1911.	Cokedale, Trinidad, Col.	.....	17	16, 1890.	Hill Farm mine, Dunbar, Pa.	...	81
10, 1881.	Midlothian, Coalfield, Va.	.....	32	18, 1912.	Hastings mine, Hastings, Pa.	.....	12
10, 1884.	W. Leisenring, W. Leisenring, Pa.	19		23, 1909.	Wehrum mine, Wehrum, Pa.	....	21
11, 1916.	Jeff & Clear No. 2, Ernest, Pa.	...	27	28, 1896.	Twin Shaft, Pittston, Pa.	.....	58
13, 1894.	Gaylord, Plymouth, Pa.	.....	13	30, 1903.	Hanna No. 1 mine, Hanna, Wyo.	169	
16, 1883.	Diamond, Braidwood, Ill.	.....	69	JULY			
17, 1915.	Prospect, Wilkes-Barre, Pa.	....	13	10, 1902.	Rolling Mill mine, Johnstown, Pa.	112	
18, 1896.	Vulcan, New Castle, Col.	.....	49	13, 1911.	Sykesville mine, Sykesville, Pa.	..	81
19, 1906.	Maitland, Walsenburg, Col.	.....	14	23, 1892.	York Farm mine, Pottsville, Pa.	..	15
20, 1905.	Virginia City, Virginia City, Ala.	108		24, 1912.	Superba mine, Evans Station, Pa.	15	
25, 1901.	Diamondville 1, Diamondv., Wyo.	28		AUGUST			
27, 1895.	White Ash, Cerrillos, N. M.	....	24	2, 1913.	East Brookside, Tower City, Pa.	19	
27, 1906.	Little Cahaba, Piper, Ala.	.....	12	4, 1917.	W. Ky. No. 7, Clay, Ky.	.....	62
29, 1916.	Davis No. 42, Kempton, W. Va.	16		7, 1902.	Bowen mine, Bowen, Ala.	.....	13
MARCH				13, 1912.	Abernant mine, Abernant, Ala.	.....	18
2, 1915.	Layland No. 8, Layland, W. Va.	112		18, 1919.	Oakdale, Laveta, Col.	.....	18
4, 1881.	Almy, Almy, Wyo.	.....	88	24, 1894.	Franklin mine, Franklin, Wash.	..	37
6, 1900.	Red Ash, Red Ash, Va.	.....	46	26, 1908.	Hailey-Okla mine, Haileyville, Okla.	29	
13, 1884.	Laurel, Pocahontas, Va.	.....	112	28, 1918.	Burnett mine, Burnett, Wash.	....	12
13, 1917.	Henderson No. 1, Hendersonville, Pa.	.....	14	31, 1915.	Orenda No. 2, Boswell, Pa.	.....	19
16, 1907.	Bond & Bruce, Tacoma, Va.	....	11	SEPTEMBER			
18, 1839.	Black Heath, near Richmond, Va.	40		3, 1907.	Sunshine mine, Sunshine, Col.	....	12
19, 1905.	Rush Run, Red Ash, W. Va.	....	24	4, 1914.	No. 1, Adamson, Okla.	.....	13
20, 1895.	Red Canyon, Red Canyon, Col.	..	60	6, 1869.	Avondale mine, Plymouth, Pa.	179	
20, 1912.	San Bois 2, McCurtin, Okla.	....	73	15, 1902.	Algoma No. 7, Algoma, W. Va.	..	17
22, 1906.	Century No. 1, Century, W. Va.	23		28, 1918.	North mine, Royalton, Ill.	....	22
23, 1896.	Berwind, Du Bois, Pa.	.....	13	OCTOBER			
26, 1912.	Jed, Jed, W. Va.	.....	82	1, 1902.	Lawson mine, Lawson, Wash.	....	11
28, 1908.	Hanna No. 1, Hanna, Wyo.	....	59	3, 1906.	Pocahontas mine, Pocahontas, Va.	..	85
29, 1888.	Keith & Perry, Rich Hill, Mo.	....	26	5, 1914.	Mulga, Mulga, Ala.	.....	16
31, 1902.	Nelson, Dayton, Tenn.	.....	16	8, 1910.	Starkville mine, Starkville, Col.	..	56
31, 1919.	Empire, Aguilar, Col.	.....	18	19, 1916.	Jamison No. 7, Barrackv., W. Va.	10	
APRIL				21, 1909.	Rock Island 8, Hartshorne, Okla.	13	
3, 1905.	Leiter, Zeigler, Ill.	.....	49	22, 1913.	Stag Canon No. 2, Dawson, N. M.	263	
5, 1915.	Shoal Creek, Panama, Ill.	....	11	22, 1916.	Roden, Marvel, Ala.	.....	18
7, 1911.	Price-Pancoast, Throop, Pa.	....	73	26, 1901.	Diamondville, Diamondville, Wyo.	22	
8, 1895.	Blue Canyon, Lake Whatcom, Wash.	.....	23	27, 1884.	Youngtown mine, Uniontown, Pa.	14	
8, 1911.	Banner, Littleton, Ala.	.....	128	27, 1914.	North Royalton, Ill.	.....	52
20, 1910.	Mulga, Mulga, Ala.	.....	40	28, 1904.	Tercio mine, Tercio, Col.	.....	19
21, 1910.	Amsterdam, Amsterdam, Ohio	....	15	29, 1919.	Amsterdam No. 2, Amsterdam, O.	20	
22, 1906.	Cuato, Tercio, Col.	.....	19	31, 1909.	Franklin No. 2, Johnstown, Pa.	13	
23, 1913.	Cincinnati, Finleyville, Pa.	....	96	NOVEMBER			
24, 1911.	Ott No. 2, Elk Garden, W. Va.	28		2, 1900.	Berryburg, Berryburg, W. Va.	....	15
27, 1905.	Eleanora, Du Bois, Pa.	.....	13	3, 1888.	Kettle Creek, Clinton Co., Pa.	....	17
27, 1917.	Hastings, Hastings, Col.	.....	121	4, 1916.	Bessie, Palos, Ala.	.....	30
28, 1914.	Eccles 5 and 6, Eccles, W. Va.	181		6, 1910.	Lawson, Black Diamond, Wash.	....	16
29, 1919.	Majestic, Majestic, Col.	.....	82	8, 1891.	Susquehanna 1, Nanticoke, Pa.	12	
30, 1905.	No. 19, Wilburton, Okla.	....	13	8, 1910.	Victor Amer. 3, Delagua, Col.	79	
MAY				9, 1888.	Shaft, No. 2, Frontenac, Kan.	....	40
1, 1900.	Winter Quarters, 1 and 4, Scofield, Utah	.....	200	13, 1909.	St. Paul 2, Cherry, Ill.	.....	256
1, 1907.	Whipple mine, Scarboro, W. Va.	16		16, 1915.	Northwestern, Ravensdale, Wash.	31	
5, 1910.	Palos mine, Palos, Ala.	.....	83	18, 1911.	Bottom Creek, Vivian, W. Va.	....	18
10, 1892.	Roslyn mine, Roslyn, Wash.	....	45	18, 1913.	Acton No. 2, Acton, Ala.	.....	24
12, 1908.	Mt. Lookout mine, Wyoming, Pa.	12		21, 1903.	Ferguson, Connellsville, Pa.	....	17
15, 1890.	Jersey No. 8 mine, Ashley, Pa.	26		26, 1886.	Conyngnam, Wilkes-Barre, Pa.	....	12
17, 1913.	Imperial mine, Belle Valley, O.	15		28, 1908.	Rachel and Agnes, Marianna, Pa.	154	
19, 1902.	Fraterville mine, Coal Cr., Tenn.	184		29, 1917.	Old Ben No. 11, Christopher, Ill.	17	
20, 1918.	Villa mine, Charleston, W. Va.	....	13	30, 1915.	Boomer No. 2, Boomer, W. Va.	23	
23, 1899.	Cumnock mine, Cumnock, N. C.	23		DECEMBER			
27, 1871.	W. Pittston mine, W. Pittston, Pa.	20		1, 1905.	Diamondville, Diamondville, Wyo.	18	
27, 1901.	Richland mine, Dayton, Tenn.	20		1, 1907.	Naomi, Fayette City, Pa.	....	34
JUNE				6, 1907.	Monogah 6 and 8, Monogah, W. Va.	.....	361
5, 1919.	Balto. Tunnel No. 2, Wilkes-Barre, Pa.	.....	92	7, 1904.	No. 5, Burnett, Wash.	.....	17
				9, 1899.	Carbon Hill 7, Carbonado, Wash.	..	31

Date	Mine	Location	Killed	Date	Mine	Location	Killed
9, 1911.	Cross Mt.,	Briceville, Tenn.	84	19, 1895.	Cummock,	Cummock, N. C.	39
9, 1914.	Tripp,	Scranton, Pa.	13	19, 1907.	Darr,	Jacobs Creek, Pa.	239
13, 1916.	Fidelity No. 9,	Stone City, Kan.	20	20, 1895.	Nelson,	Dayton, Tenn.	25
15, 1917.	Yukon No. 1,	Bluefield, W. Va.	17	20, 1917.	Nemo,	Harriman, Tenn.	11
16, 1907.	Yo. ande,	Yolande, Ala.	56	23, 1899.	Summer,	Summer, Pa.	19
16, 1913.	Vulcan,	New Castle, Col.	37	29, 1908.	Lick Branch,	Switchback, W. Va.	50
18, 1885.	Nanticoke,	Nanticoke, Pa.	26	31, 1907.	Bernal,	Carthage, N. M.	11

BITUMINOUS MINING METHODS IN 1918

Fifty-five and nine-tenths per cent. of the bituminous coal mined in 1918 was recovered by machines. According to reports made to the United States Geological Survey, 23.8 per cent. was hand-mined, 17.5 per cent. was shot from the solid and 1.4 per cent. was recovered by steam shovel. In 1917, the percentages were as follows: Machine mined, 55.5; hand, 25.6; shot from the solid, 17.3, and mined with steam shovels, 1.1 per cent.

Detailed figures in net tons for the different states show the following information:

State	Mined by hand	Shot from the solid	Mined by machines	Steam-shovel pits	Not reported	Total Production
Alabama	4,940,978	8,496,732	5,951,547	231,078	264,627	19,184,962
Arkansas	140,654	1,727,293	242,984	7,200	109,238	2,227,369
Colorado	6,705,256	906,498	4,574,017	.....	221,800	12,407,571
Georgia	1,780	64,996	.....	.....	.....	66,716
Illinois	8,486,806	29,523,059	50,566,911	512,863	201,466	89,291,105
Indiana	3,537,242	10,530,421	14,997,532	1,391,336	222,103	30,678,634
Iowa	2,283,233	4,794,809	876,754	4,100	233,299	8,192,195
Kansas	472,258	5,843,916	56,314	917,345	272,134	7,561,947
Kentucky	1,358,909	4,781,433	24,805,171	12,000	652,054	31,612,617
Maryland	3,266,192	785,201	301,965	14,651	129,281	4,497,297
Michigan	12,732	141,495	1,272,285	.....	38,256	1,464,818
Missouri	932,448	2,050,056	1,244,682	1,201,583	238,961	5,667,730
Montana	959,322	1,278,452	2,268,318	.....	26,413	4,532,505
New Mexico	2,400,607	363,799	1,236,700	.....	22,124	4,023,239
North Dakota	34,059	253,365	344,482	3,434	84,393	719,733
Ohio	1,450,940	1,700,960	38,841,452	2,705,785	1,113,806	45,812,943
Oklahoma	189,808	2,516,876	1,899,487	160,064	47,312	4,813,447
Penn. (bit.)	63,719,407	12,308,963	98,334,139	1,031,578	3,156,654	178,550,741
Tennessee	1,829,414	3,286,551	1,549,945	.....	165,138	6,831,048
Texas	1,718,336	486,799	2,000	.....	54,000	2,261,135
Utah	1,835,318	473,227	2,767,084	.....	11,196	5,136,825
Virginia	1,535,032	2,027,310	6,394,276	.....	338,190	10,289,808
Washington	2,360,044	1,473,058	249,110	.....	.....	4,082,212
West Virginia	26,069,413	2,478,421	60,688,232	26,593	673,178	89,935,839
Wyoming	2,040,907	2,802,922	4,462,737	68,633	63,489	9,428,688
Other States	24,335	72,319	.....	.....	8,042	104,696
Total bit.	137,655,407	101,168,981	323,931,133	8,288,245	8,342,054	579,385,820
Penn. anth.	.....	.....	1,857,514	2,360,183	.....	98,826,084

THE GENERAL BITUMINOUS STRIKE OF 1919

The last two months of 1919 saw the most widespread strike of years in the bituminous coal fields of the United States. During the period from November 1 to December 13, 1919, production dropped off about 25,000,000 tons, approximately 400,000 men refused to work, railroad service was crippled, federal control of prices and distribution were revived and industry was threatened with a general paralysis. An attempt to settle the controversy by injunction was launched by the government, and abandoned by the Attorney General of the United States, A. Mitchell Palmer, and the events leading up to the arrangements between the Department of Justice and the leaders of the United Mine Workers, under which the unionized fields returned to work, was made the subject of a fruitless Senatorial investigation.

The first public step in the campaign that resulted in the general strike was taken early in the spring of 1919. There had been rumblings of discontent before that time at the refusal of the United States Fuel Administration to sanction an advance in wages over those named in the Washington agreement of 1917 (see "Bituminous Wage Scales in 1919-20" in another part of this volume), but these had brought only increased general restlessness and sporadic strikes of local character. At a meeting at Indianapolis in March, 1919, the policy committee of the U. M. W. framed a report in which the following demands were made:

1. Recognizing that unemployment is a constant threat and menace to the security, happiness and prosperity of the miners of the United States, which unemployment is created by the overdevelopment of the mining industry, we concur in the recommendation of President Hayes and declare for a six-hour day, five days per week, and recommend that the full power and influence of the U. M. W. of A. be used to attain that end.

2. We concur in the recommendation of President Hayes that all the mine workers of the country receive a substantial increase on all existing tonnage, day work, yardage and dead work prices and that to secure the same will be one of the future aims of our organization.

3. We concur in the recommendation of President Hayes and declare for the nationalization and democratic management of all the coal mines in the United States.

4. We recommend that the three resident international officials be empowered to draft or have drafted for presentation to the special international convention when convened a tentative draft of bill to be presented to Congress and providing for nationalization of all coal mines.

5. We recommend that the international officials be authorized to wage an extensive campaign of organization in the anthracite districts and in the sparsely organized and non-union bituminous districts.

6. We recommend that it be the declared policy of the international union that the supplemental agreement in the anthracite region, which carries the increase in wages secured in November, 1918, shall remain in full force and effect until the expiration of the basic anthracite agreement, and that the full power and influence of the U. M. W. of A. shall be employed to that end.

7. We recommend that the international officials be instructed to call a special international convention at a suitable time previous to the termination of existing agreements for the purpose of giving consideration to the recommendations of the policy committee and to work out the details of the agreement that will ensue after the expiration of existing agreements, it being understood that basic agreements shall not be disturbed until a special international convention is held.

The radical character of the report attracted little public attention at the time it was issued. Those familiar with mine organization politics were inclined to view it as a piece of political strategy. It was pointed out that the action was taken at one of the few meetings over which Frank J. Hayes, elected international president to succeed John L. Lewis, presided. K. C. Adams, editor of the *American Coal Miner* and former publicity agent for the U. M. W., declared that the members of the policy committee were as surprised as outsiders when the subcommittee recommendations were placed before them. It was held by this observer to be an attempt upon the part of one faction to cut the ground from under the faction headed by Frank Farrington, president of the Illinois district organization and an active candidate for the international presidency, by presenting a program more radical than that the Illinois leader, who had formerly been counted in the ranks of the conservatives, but who had had difficulty in holding his own organization in line, had or would advocate.

The first development in the nature of dispute between operators and miners arose over the date of the expiration of the Washington agreement. That agreement provided that "subject to the next biennial convention of the U. M. W. of A., the mine workers' representatives agree that the present contract be extended during the continuation of the war, and not to exceed two years from April 1, 1918." In his report at the biennial convention of the U. M. W., held at Cleveland in September, 1919, John L. Lewis, then acting president of the international organization, said:

THE COAL TRADE

LEWIS TAKES UP QUESTION OF TERMINATION

"It will be noted that the report of the policy committee as adopted did not specify any date of termination for the existing wage agreements, but in his address to the conference the matter was referred to by President Hayes in the following language:

"As you know, our present wage agreements terminate when peace is promulgated. No one can predict with any degree of certainty when the Peace Congress will conclude its labors and give to the world the official terms of peace. It may be a month, it may be two months, or it may be longer. However, I am sure we are all agreed that it is time we took stock of ourselves and planned for the future of our people. We want to be prepared with a definite program and an established policy when we meet the coal operators."

"The above quoted statement of President Hayes," continued Mr. Lewis, "was based upon the ruling of the United States Fuel Administration, which was a party to the Washington wage agreement, that said agreement would be in full force and effect until war was officially ended by ratification of the treaty of peace by the United States Senate. The Washington wage agreement, existing for the before-mentioned period of time, was submitted to the regular international convention of 1918 and ratified by that body. Consequently this interpretation was accepted as a matter of fact by the officers of the organization and the delegate representatives to the national policy meeting held in Indianapolis.

"It will be noted that the seventh section of the report of the policy committee recommended that the international officers be instructed to call a special international convention at a suitable time previous to the termination of existing agreements. Because of the long drawn out negotiations of the peace conference at Versailles it was apparent that the time for the calling of the regular international convention would be at hand before the treaty of peace could be voted on by the United States Senate. Coupled with this fact was the abnormal industrial depression which prevailed in the bituminous coal industry to such an extent that it was recognized by the leaders of your organization that to be thrust into wage negotiations with the operators at such a period would be most unfortunate and a material handicap to our aims. It was deemed advisable, if possible, to arrange for the wage negotiations during the fall of this year, when trade conditions would be improved and operating time increased, rather than to hazard the result of negotiations at a time when a large percentage of the mine workers were idle and business and industrial conditions comparatively paralyzed throughout the country."

WANTS AGREEMENT DECLARED AT END

In the same report, Mr. Lewis explained the failure to push the nationalization plank as due to the impossibility of preparing proper bills for presentation to Congress in the time available. The following recommendations as to wage matters were made:

"1. The U. M. W. of A. are in no way responsible for the failure of the Senate of the United States to ratify the Treaty of Peace within a reasonable length of time and thus officially terminate the Washington wage agreement in the bituminous fields. We have, as an organization, demonstrated our good faith and exhibited every moral desire to liquidate our responsibilities. We are today, however, face to face with a situation wherein we cannot justify any further delay as concerns our own affairs. I accordingly recommend that this convention take action declaring the Washington wage agreement officially terminated at a date not later than November 1.

"2. In the event that a basic agreement in the Central Competitive Field is not negotiated by the date fixed for the expiration of the present contract,

I recommend that there be no sectional settlements by districts or groups of districts, but that there be a complete cessation of mining operations throughout our entire jurisdiction.

"3. In the event that a satisfactory basic agreement is reached in the Central Competitive Field, then it shall from its date of operation affect all outlying districts and be retroactive to that date.

"4. I recommend that the automatic penalty clause, incorporated as a wartime provision in the Washington wage agreement, be eliminated in our next contract."

These recommendations were adopted by the convention, and a call for a joint meeting with the operators for the Central Competitive Field issued for Buffalo, N. Y., on September 25. At this meeting, Mr. Lewis presented, as the mine workers' demands, the following report of the U. M. W. scale committee presented to the convention at Cleveland September 23 and indorsed by that body:

To the Twenty-seventh Consecutive Constitutional and Fourth Biennial Convention of the U. M. W. of A.

Greetings:

We, your scale committee, to whom was delegated the duty of drafting a proposed wage scale, herewith submit for your consideration and acceptance the following report:

1. We recommend that this report be accepted as a substitute for all wage scale resolutions that have been presented to the convention.

2. We recommend that this convention demand a 60 per cent. increase to be applicable to all classifications of day labor and to all tonnage, yardage and dead work throughout the Central Competitive Field.

3. We recommend that this convention demand that all wage agreements that are negotiated to replace existing agreements shall be based on a six-hour work day, from bank to bank, five days per week.

4. That all day labor shall be paid time and a half for overtime and double time for all work done on Sundays and legal holidays.

5. That all agreements entered into by the United Mine Workers of America shall have incorporated therein a provision providing for a weekly pay day.

6. That all double shift work on the coal shall be abolished except as may be necessary for development and ventilating purposes and development for increased tonnage shall not be regarded as being a reason for double shift work; it being understood that this rule shall not be applicable to new mines that are in the process of development.

7. That no automatic penalty clause shall be written into any agreement entered into by the United Mine Workers of America.

8. That all internal differences not covered by joint interstate agreement shall be referred back to the respective districts for adjustment.

9. That all contracts in the bituminous field shall be declared as having automatically expired November 1, 1919, and that no sectional settlement shall be allowed and new contracts must run concurrently for a period of two years in all bituminous districts under our jurisdiction.

10. That agreements negotiated for outlying districts shall be retroactive and become effective on the date upon which the agreement for the Central Competitive Field becomes effective.

11. That no agreement for the Central Competitive Field shall be concluded until after this convention has been reconvened and the agreement has been ratified by the reconvened convention, which reconvened convention shall also define a policy to be applicable to outlying districts, and that the reconvened convention shall be held in Indianapolis, Indiana, on such date as may be designated by the resident international officials.

12. We recommend that in the event a satisfactory wage agreement is not secured for the Central Competitive Field before November 1, 1919, to replace the one now in effect, that the international officers be authorized to and are hereby instructed to call a general strike of all bituminous miners and mine workers throughout the United States, the same to become effective November 1, 1919.

13. That this convention go on record as favoring the ratification of the wage demands made by the anthracite miners in their tri-district convention which was held at Wilkes-Barre, Pa., from August 19 to 23, inclusive, and we pledge to the anthracite workers our power and influence in aiding them in the fulfillment of their demands.

OPERATORS REJECT DEMANDS

The answer of the operators to these demands, presented September 29, said:

The present wage agreement, modifying and extending the scale contract of April 1, 1916, runs "during the continuation of the war and not to exceed two years from April 1, 1918." It was executed by the duly accredited and duly authorized representatives of both operators and miners on October 6, 1917, at Washington, D. C., under the supervision and with the participation of United States Fuel Administrator Garfield, acting under the provisions of the Lever act, a statute still effective. At that time it was definitely understood that "the continuation of the war" would be until formal proclamation of peace by the President of the United States. That agreement is, therefore, in full force and effect until such proclamation, unless terminated by its expiration March 31, 1920.

The operators are here for the purpose of negotiating a contract to be effective immediately upon the legal termination of the present contract, to prevent unsettlement of the industry and hardship to the public during the busy winter months, should peace be proclaimed prior to April 1, 1920, and the present agreement be thereby suddenly terminated.

The demands (submitted by Mr. Lewis) are radically extravagant and manifestly impossible of acceptance, in addition to which they indicate:

(1) A disregard by the U. M. W. of A. for their obligations under the existing contract solemnly entered into and still in force;

(2) A complete lack of authority on your part to negotiate as provided and intended by the call; and,

(3) Include an autocratic notice that, unless we accept these demands, you are instructed to call a general strike of all bituminous coal miners and mine workers of the United States on November 1.

Passing for the moment the arbitrary and wholly un-American way in which we are asked to act, without regard to our contract rights or to the public welfare, and with the unqualified strike order as an implied threat, let us briefly review the more important of your demands:

WOULD CUT PRODUCTION FIFTY PER CENT

1. In place of the existing eight-hour day, six-day week, you demand a six-hour day from "bank to bank," five days per week, which would result in only 95 hours or less of actual work per week and which, with no double shifting or working places or productive machinery as also demanded, would be a reduction of possible productive effort to practically one-half of present altogether reasonable standards, with resulting great increase of costs. Such a demand cannot be entertained. National necessity demands the greatest possible production of essential commodities.

2. You demand a 60 per cent. increase in wage scale, time and one-half for overtime, and double time for legal holidays and Sundays. Acceptance of these demands, with the indirect increases inherent to other items of your demands, would more than double the already high cost of producing coal, with consequent large direct and indirect additions to the cost of living of every citizen and a demoralization and prostration of the industry. Such wage increases are impossible and their attempted enforcement would react with great harm equally on the nation and on the individual miners you represent.

3. You demand that no automatic penalty clause be written into any agreement entered into by the U. M. W. of A. The present automatic application of penalty clauses, applying to both operators and miners, and by the government made a requirement contingent to the government approval of our Washington agreement, is an outgrowth of the inability of the union officials to prevent illegal strikes in violation of their orders and of contract obligations. The provision has been effective, and present conditions of unrest and radicalism make such policing power in the hands of the responsible officials of the contracting parties more than ever imperative. Such penalty clauses contain no terrors for those who in good faith abide by their self-made agreements.

4. You demand a change from the long-established custom of having wage agreements expire in the spring, when there is least danger of inconvenience to the public, to an expiration November 1, which is the time of maximum demands for coal. You demand other items, none of which have apparent constructive merit, but all of which tend to increase cost and decrease production. We must also dismiss these points as undesirable.

POSITION OF THE OPERATORS

The operators have sent their accredited representatives to this conference with full power to negotiate a contract as provided by the call. We regret to find the miners' convention from which you come has failed to vest in you corresponding power and discretion. With your authority apparently limited to a presentation of the excessive demands above set forth, and to reconvene your convention or execute your instructions to call a general strike November 1, we are faced with the alternative of granting your demands in full or of requesting you to go back for authority to negotiate with us in conformity with the call.

The operators hold that no abrogation of the existing contract can be had prior to its legal termination, except by the mutual agreement of all parties thereto—the

operators, the miners, and the government. We are ready and willing to negotiate a new contract to succeed at its legal expiration the contract now in effect, but we must insist that such negotiation be entered into in a spirit of reasonableness and that the representatives of the miners be vested with their usual discretionary power to really negotiate. Only under such conditions is it possible to reach a prompt and definite conclusion and to preserve the principles of collective bargaining.

The operators came to this conference with the consciousness of the more than usually grave responsibilities resting upon them because of their duty to cooperate in the processes of postwar adjustments with which the nation is confronted; they expected the miners to approach these important negotiations in the same spirit. But with your hands tied by the nature of your instructions, and a strike threat your only impelling argument, we ask you if there is any possibility of securing results by continuing our present conference under such limitations.

GARFIELD INDORSES OPERATORS' STAND ON TERMINATION

Neither operators nor miners would yield from the positions as expressed in their respective statements and the conferences recessed on October 2 to reconvene at Philadelphia on October 9. In the interim, Dr. Garfield, in a letter dated October 3 and addressed to Thomas T. Brewster, chairman of the executive committee of the operators, upheld the contention that the Washington wage agreement was still in effect. "It does not expire," he wrote, "till peace is promulgated or till April 1, 1920, should a state of war continue to exist so long."

The Philadelphia conferences were no more fruitful of results than the Buffalo meetings and on October 11 they were adjourned sine die upon the recommendation of the joint sub-scale committee.

The next public step was taken October 15, when the following strike call, signed by Mr. Lewis and William Green, secretary-treasurer, was issued:

To the Officers and Members of the U. M. W. of A.

Greeting:

The joint conference of operators and mine workers, representing the Central Competitive Field, which reconvened in Philadelphia on October 9, came to a *sine die* adjournment on Saturday, October 11, without agreement.

The mine workers' representatives made an earnest, sincere attempt to negotiate a new agreement to be effective November 1, 1919. We offered facts and data of a substantial nature to support our claim for consideration of our wage demands as outlined by the international convention at Cleveland. We were met by the blunt refusal of the operators to agree to any of our demands. No proposals of any character looking toward the formation of a new agreement were offered by the operators. The only proposition presented by them was their oft-repeated offer to continue the Washington wage agreement until March 31, 1920. This proposition was rejected by your representatives because it meant the continuance of an intolerable situation and offered no relief to our membership from the present material hardships being endured by them. The arbitrary attitude of the operators, persistently maintained day after day in the joint conference, precluded any possibility of an agreement and resulted in a final adjournment. The responsibility for this action will accordingly lie with the operators.

The international convention at Cleveland on September 23, in considering the report of the scale committee, adopted the following:

"We recommend that in event a satisfactory wage agreement is not secured for the Central Competitive Field before November 1, 1919, to replace the one now in effect, that the international officials be authorized and are hereby instructed to call a general strike of all bituminous miners and mine workers throughout the United States, the same to become effective November 1, 1919."

Acting in conformity with the authority vested by the international convention, as herein quoted, the undersigned executive officers of the U. M. W. of A. hereby direct all members of our organization employed in and around the mines of the bituminous coal producing districts within the jurisdiction of our organization in the United States to cease the production of coal at midnight on Friday, October 31, 1919. The strike thus called will continue in full force and effect until officially terminated by order of the international union.

Local unions will permit a sufficient number of men to remain at work to insure the proper care and protection of all mining properties, in conformity with the provisions of the district agreements in the several fields. The fullest cooperation must be given the operator to prevent injury to property, and under no circumstances should this rule be violated or set aside by local unions.

There must be no suspension or stoppage of mining operations under this order until midnight on Friday, October 31. It is essential that there be a concert of

action among all our membership in carrying into effect this most important policy. The U. M. W. of A. are now embarking upon the greatest enterprise ever undertaken in the history of the trade union movement, and each member of our organization must cooperate and assist in bringing success to our efforts. Orderly procedure must be followed throughout. You will be guided only by the policies of your union and the official orders emanating from its officers.

SECRETARY WILSON TRIES FOR COMPROMISE

Two days later, W. B. Wilson, Secretary of Labor, addressed letters to Messrs. Brewster and Lewis inviting a conference of the full scale committee at Washington on October 21. While both sides expressed a willingness to meet with the government official, the operators, in a letter from Mr. Brewster, declared that "the resumption of such negotiations should be predicated upon the following:

"1. The miners must indicate their willingness to carry out the existing contract to its legal termination.

"2. To do so the present strike order effective November 1 must be rescinded and work must be continued pending negotiations.

"3. In order to produce sufficient coal for the needs of the public at the lowest possible cost, we refuse to negotiate any reduction in the hours of labor below the present standard eight hours per day, six days per week.

"As pertinent to the questions involved, the operators deem it advisable to say that the coal operators of the Central Competitive Field have adhered to the principles and practices of collective bargaining for thirty-three years with the largest body of organized labor in the United States, and it is our opinion that our scale negotiations have broken down and that our contract has been abrogated by the miners' union in their call for a strike November 1 because the present system of collective bargaining does not fix equal responsibility under the law upon the employer and the labor union.

"Our experience teaches us that no set of employers should agree to a system of collective bargaining which does not make both parties to the contract equally liable and responsible for the observance of the terms of such contract."

After having been in conference at Washington for three days, Secretary Wilson, on October 24, placed before the operators and miners a letter from J. P. Tumulty, secretary to President Wilson, in which it was stated that the President approved fully the suggestion of Secretary Wilson that "the wage scale committees of the operators and miners go into conference without reservation for the purpose of negotiating an agreement as though no demands had been made or rejected." If such a consideration de novo failed, concluded the letter, "the interests of the public are of such vital importance in connection with the production of coal that it is incumbent upon them (the miners and operators) to refer the matters in dispute to a board of arbitration for determination, and to continue the operation of the mines pending the decision of the board." The operators accepted the proposal, but the miners declined upon the ground that arbitration proceedings would be long drawn out and the maintenance of status quo during such period would be unfair to the mine workers.

PRESIDENT WILSON SCORES U. M. W. TACTICS

The next step, taken within 24 hours after the Secretary of Labor admitted the failure of his efforts, was the Presidential blast of October 25. This statement in full was as follows:

On September 28, 1919, the convention of the U. M. W. of A. at Cleveland, Ohio, adopted a proposal declaring that all contracts in the bituminous field shall be declared as having automatically expired November 1, 1919, and making various demands, including a 60 per cent. increase in wages and the adoption of a six-hour day and a five-day week; and providing that, in the event a satisfactory wage agree-

ment should not be secured for the Central Competitive Field before November 1, 1919, the national officials should be authorized and instructed to call a general strike of all bituminous miners and mine workers throughout the United States, effective November 1, 1919.

Pursuant to these instructions, the officers of the organization have issued a call to make the strike effective November 1. This is one of the gravest steps ever proposed in this country affecting the economic welfare and the domestic comfort and health of the people.

It is proposed to abrogate an agreement as to wages which was made with the sanction of the United States Fuel Administration and which was to run during the continuance of the war, but not beyond April 1, 1920.

This strike is proposed at a time when the government is making the most earnest effort to reduce the cost of living and has appealed with success to other classes of workers to postpone similar disputes until a reasonable opportunity has been afforded for dealing with the cost of living.

It is recognized that the strike would practically shut off the country's supply of its principal fuel at a time when interference with that supply is calculated to create a disastrous fuel famine. All interests would be affected alike by a strike of this character, and its victims would be not the rich only, but the poor and the needy as well—those least able to provide in advance a fuel supply for domestic use.

It would involve the shutting down of countless industries and the throwing out of employment of a large part of the workers of the country. It would involve stopping the operation of railroads, electric light and gas plants, street railway lines, and other public utilities, and the shipping to and from this country, thus preventing our giving aid to the allied countries with supplies which they so seriously need.

The country is confronted with this prospect at a time when the war itself is still a fact, when the world is still in suspense as to negotiations for peace, when our troops are still being transported and when their means of transport is in urgent need of fuel.

From whatever angle the subject may be viewed, it is apparent that such a strike in such circumstances would be the most far-reaching plan ever presented in this country to limit the facilities of production and distribution of a necessity of life and thus indirectly to restrict the production and distribution of all the necessities of life.

A strike under these circumstances is not only unjustifiable, it is unlawful.

The action proposed has apparently been taken without any vote upon the specific proposition by the individual members of the U. M. W. of A. throughout the United States, an almost unprecedented proceeding.

I can not believe that any right of any American worker needs for its protection the taking of this extraordinary step, and I am convinced that when the time and manner are considered it constitutes a fundamental attack, which is wrong both morally and legally, upon the rights of society and upon the welfare of our country.

I feel convinced that individual members of the U. M. W. would not vote, upon full consideration, in favor of such a strike under these conditions.

When a movement reaches the point where it appears to involve practically the entire productive capacity of the country with respect to one of the most vital necessities of daily domestic and industrial life, and when the movement is asserted in the circumstances I have stated, and at a time and in a manner calculated to involve the maximum of danger to the public welfare in this critical hour of our country's life, the public interest becomes the paramount consideration.

In these circumstances I solemnly request both the national and the local officers and also the individual members of the U. M. W. of A. to recall all orders looking to a strike on November 1 and to take whatever steps may be necessary to prevent any stoppage of work.

It is time for plain speaking. These matters with which we now deal touch not only the welfare of a class but vitally concern the well-being, the comfort, and the very life of all the people. I feel it my duty in the public interest to declare that any attempt to carry out the purposes of this strike and thus to paralyze the industry of the country, with the consequent suffering and distress of all of our people, must be considered a grave moral and legal wrong against the government and the people of the United States.

I can do nothing less than to say that the law will be enforced and means will be found to protect the interests of the nation in any emergency that may arise out of this unhappy business.

I express no opinion on the merits of the controversy. I have already suggested a plan by which a settlement may be reached, and I hold myself in readiness at the request of either or both sides to appoint at once a tribunal to investigate all the facts with a view to aiding in the earliest possible orderly settlement of the questions at issue between the coal operators and the coal miners, to the end that the just rights not only of those interests, but also of the general public, may be fully protected.

LEWIS ATTACKS PRESIDENT'S STATEMENT

Instead of effecting harmony, the President's statement appeared to enrage the leaders of the U. M. W. In a telegram to Secretary Wilson, dated October 30, President Lewis, after declaring that the failure of the negotiations was chargeable to the operators, said:

The unprecedented and unwarranted action of the Cabinet and the President of the United States in issuing statement of Saturday last has done more to prevent satisfactory settlement of impending strike and working out of wage agreement than any other element which has entered into the situation. The President's statement is a fiercely partisan document because it attacks the intentions of the miners without even suggesting that mine operators may have brought about this unhappy situation; and further because threat is made to exercise full force of government to prevent stoppage of work without any corresponding threat to exert full force of government to enforce fair working conditions and a living wage. It is indeed a sad commentary upon principles of square dealing when the President of the United States and his Cabinet by unanimous vote ally themselves with sinister financial interests, which seek to deny justice to labor and precipitate our country into industrial turmoil.

The President states: "The mine workers' projected strike is not only unjustifiable but unlawful." He states further "It is wrong morally and legally." In other words, the President says it is a crime for the miners to strike and threatens the punishment for the crime. May I point out to you that under the laws of the United States, beyond any Presidential amendment or abrogation, it is not a crime to strike; it can not be made a crime to strike and that an individual can not be punished for striking as for the commission of crime.

The President of the United States is the servant and not the master of the Constitution. The Constitution is the supreme law of the land. In the interpretation and application of the Constitution the decisions of the Supreme Court are final authority. The President's statement of October 25, 1919, threatens invasion of Constitutional and inalienable rights of American citizens; it is a climax of a long series of attempted usurpation of executive power.

The Presidential statement announces as its excuse for threatening invasion of Constitutional rights "that the war itself is still a fact." Two days later, however, in the veto message to Congress the President refused to approve of enforcement of an act which he said "was passed by reason of emergency of war and whose objects have been satisfied in the demobilization of the army and navy." If the President was right on Monday, I submit, sir, that he was wrong on Saturday.

The Presidential edict threatens to deny mine workers protection of both the thirteenth and fourteenth amendments to the Constitution. They are threatened with involuntary servitude by the Presidential attempt to make a refusal to work individually or collectively a crime. This despite the fact that the Supreme Court has repeatedly held that under these amendments a laborer can not be forced even under the guise of contract obligation to render involuntary service. The Supreme Court of the United States has always asserted "There is no more important concern than to safeguard the freedom of labor, upon which alone can enduring prosperity be based."

It is difficult to believe that the President would have issued such a document had he been physically able of obtaining first-hand information and of exercising his own uninfluenced intelligence in this most important problem. Yet his statement of October 25 threatens the mine workers with a sanctified peonage; demands that they perform involuntary service; proclaims a refusal to be a crime when no such crime exists, nor can such a crime be defined under the Constitution. The right and the duty rests upon free American labor to maintain unimpaired the Constitutional privileges and guarantees of all American citizens. The U. M. W. of A. believe the great majority of our citizenship will resent any trespass upon these principles.

The operators, in a statement issued October 25, while reiterating their claim that production continue pending negotiations, that the existing contract did not expire until March 31, 1920, and that the demand for shorter hours should be outlawed, declared that they still held "themselves and their properties ready and willing to serve the public in any practical way which may be evolved as a solution of the problem." The day before the strike, Mr. Brewster said: "We have accepted in its entirety the President's proposal of October 24 and reaffirm that acceptance. We welcome an investigation by a tribunal which the President may appoint, as suggested by him in the last paragraph of his statement of October 25. We hold ourselves ready to comply at all times with any commands which the government, acting in the interests of the whole American people, may deem wise to issue."

Notice that the government did not propose to sit idly by and see the mines closed down was served upon the U. M. W. by Attorney General Palmer in a statement issued a few days after the President's broadside. In that statement Mr. Palmer declared that the illegality of the bituminous strike would be established "without infringing upon the recognized right of men in any line of industry to work when they please and quit work when they please." The proposed strike, he said, was ordered in a manner, for a purpose and with a necessary effect "which, taken together, put it outside the pale of the law." He accused the U. M. W. of formulating demands without an expression of opinion from its membership and of authorizing a strike before these demands had been presented to the operators.

"The demand for a new wage agreement," he said, "covered only part of the coal fields, but the strike order was sent broadcast to workers in other fields where operators had been given no opportunity to even consider demands for increased wages or decreased hours. All this has been done while the miners in every field, through their right of collective bargaining, had entered into a solemn contract with the operators, fixing wages and hours for a definite period which has not yet expired.

"While it is perfectly plain that the war is still on and any contract running until its conclusion is still in force, whatever weight may be given to the argument that the successful operation of the war no longer requires such contracts, it has no application whatever to the large number of such contracts which expire at a fixed date without regard to the war period."

Two days before the strike order went into effect, representatives of the Department of Justice appeared before Judge A. B. Anderson in the United States District Court at Indianapolis with a petition for an injunction against international and district officials of the U. M. W. to prevent their carrying the strike into effect. Based upon the Lever act, the petition of the government charged that the miners' representative at Buffalo and Cleveland had attempted to intimidate the operators and in violation of the act and against public policy "conspired, agreed and arranged to issue the strike order" sent out from Indianapolis on October 15. The petition further declared that, if the strike became effective it would prevent the operation of railroads, and cited the fact that under the Railroad Administration's contract the government is obligated to pay the roads a guaranteed return for the use of their properties. It was averred in the petition that the railroads had more than 1,200 contracts for coal, 60 per cent. of which were based upon the extension of the Washington wage agreement to March 31, 1920.

It was pointed out in the petition that if the strike took place the Railroad Administration would be unable to fulfill these contracts and the deficit in income have to be made up by the government. It was also pointed out that the suspension of railroads would entail the stoppage of mails and would interfere with the transportation of the armed forces of the United States and cause the cessation of interstate commerce.

GOVERNMENT PRAYS FOR INJUNCTION

The prayer for injunction, which was made the basis for a temporary restraining order issued October 31, said:

Wherefore the plaintiff prays:

1. That writs of subpoena issue directed to each and every defendant, commanding them to appear herein, and answer but not under oath (answer under oath being hereby expressly waived) the allegations contained in the complaint, and to abide by and perform such orders and decrees as the court may make in the premises.

2. That the court issue forthwith its restraining order directed to each of said defendants, both as individuals and in their said respective capacities, and to all other persons whose names are unknown to the petitioner, unlawfully combining,

conspiring, agreeing and arranging with them and to all other persons whomsoever, commanding and enjoining them not to issue any messages that the aforesaid strike is to be enforced as previously announced and to desist and refrain from doing any further act whatsoever to bring about or continue in effect the above described strike and cessation from work on the part of the miners and mine workers in the bituminous mines; from issuing any further strike orders to local unions for the purpose of supporting such strike; from issuing any instructions, written or oral, covering or arranging for the details of enforcing such strike ordered to begin at midnight on October 31, 1919; from issuing any message of exhortation or encouragement to striking miners or mine workers or unions thereof to abstain from work, and not to return to the mines in pursuance of such strike; and from issuing or distributing or taking any steps to procure issuance or distribution to miners and mine workers striking and abstaining from work in pursuance of such strike of so-called strike benefits or sums of money previously accumulated or subsequently acquired to assist workers to subsist while striking, or to aid them in any way by reason of or inference to such strike, and from conspiring, combining, agreeing or arranging with each other or any other persons to limit the facilities for the production of coal, or to restrict the supply or distribution of coal or from aiding or abetting the doings of such act or thing.

3. That the court after notice to and hearing of the defendants, issue its temporary injunction pendente lite enjoining the defendants and all other persons unlawfully conspiring, combining, agreeing and arranging with them as hereinbefore alleged during the continuance of this suit, in all respects as enumerated in the next preceding paragraph hereof:

And further from permitting said strike order to remain in effect and commanding them to desist from aiding said strike by permitting said strike order to remain in effect and commanding them to issue a withdrawal and cancellation of said strike order.

4. That the court upon final hearing of this suit, issue its permanent injunction against the defendants and all persons unlawfully conspiring, combining, agreeing and arranging with them as hereinbefore alleged, in all respects as specified in paragraphs 2 and 3 of this suit.

LEADERLESS STRIKE PROVES EFFECTIVE

Although the temporary restraining order apparently left the strike leaderless, it did not halt the strike. According to a survey made by the *Coal Trade Journal* covering conditions up to November 5, the greater part of the membership of the U. M. W. in the bituminous fields obeyed the strike order. The only breaks of consequence reported were in Hopkins, Webster and Christian Counties, Kentucky, and in northern West Virginia. In the Kentucky area named 47 mines, the majority of them manned by union workers, were in operation. Eighteen union mines were working in northern West Virginia. The strike was 100 per cent. effective in Illinois, Indiana, western Kentucky, Michigan and the Southwest. Ohio operations were confined to one small mine open by union sufferance to supply a local utility at Athens and country banks. In Alabama between 25 and 30 mines were working. The nonunion fields of Pennsylvania, including the Connellsville, Greensburg, Somerset, Black Lick and Windber regions, were operating with increased forces. Production in West Virginia started on a 50 per cent. basis and included mines in the Pocahontas, Winding Gulf, Tug River, Guyan Valley, Williamson, Panhandle and northern fields. The Elkhorn, Kentucky, area reported 50 per cent. operations, the Hazard field was nearly normal, but operations in the Harlan district were confined to steel company mines.

At the time of the strike, the U. M. W. claimed a membership of 412,285 workers in the bituminous fields. This membership, as reported by districts, was as follows: District 2, Central Pennsylvania, 49,384; District 5, Western Pennsylvania, 40,967; District 6, Ohio, 44,205; District 8, Indiana block, 1,903; District 10, Washington, 5,227; District 11, Indiana, 32,553; District 12, Illinois, 99,303; District 13, Iowa, 14,861; District 15, Colorado, 3,774; District 16, Maryland, 5,296; District 17, West Virginia, 27,206; District 19, Tennessee and Kentucky, 14,656; District 20, Alabama, 9,750; District 21, Arkansas, Texas and Oklahoma, 14,992; District 22, Wyoming, 7,363; District 23, Western Kentucky, 6,324; District 24, Michigan, 2,397; District 25, Missouri, 8,877; District 27,

Montana, 4,936; District 29, West Virginia, 6,935. The total number of men in the bituminous mines in 1917, as reported by the United States Geological Survey, was 603,143.

While the government was proceeding against the miners in the courts, it was also, as detailed elsewhere in this volume (see "Fuel Administration Bituminous Price Schedules" and "Government Distribution of Bituminous Coal"), reestablishing price and distribution control. When the government petition came up for hearing on the application for a temporary injunction November 8, Judge Anderson swept aside the defense offered by the U. M. W. and gave the international officials until November 11 to withdraw the strike order. On that date a draft of the order was presented to and approved by the court. This order, which did not direct the miners to return to work, was printed on plain stationery and sent out without the official seal of the organization. For this, it was later charged that the order was issued in bad faith and with attempt to hoodwink the court. Whatever the purpose, the fact, as shown by the detailed analysis of production during the strike period which appears in a subsequent paragraph, was that it was generally ignored by the union miners.

NEGOTIATIONS RESUMED AT WASHINGTON

Negotiations between operators and miners were resumed at Washington on November 14 at the invitation of Secretary Wilson. The miners again presented their old program, which was denounced by Secretary Wilson as impossible. He proposed that a general committee be convened to work out an agreement for all fields. This the operators declined to do. On November 20, the operators submitted a counter proposal to the U. M. W. original demands. This provided for an increase of 15 cents per ton in pick and machine mining rates and an increase of 20 per cent. to day labor. It was contended that the 15 cents per ton would represent an increase of 23.2 per cent. to the pick miners and 35.1 per cent. to machine workers. In addition, the operators proposed that the new contract run until March 31, 1922, that a uniform penalty clause for strikes in violation of the agreement be incorporated into the contract and that the officers and national organization of the U. M. W. be made responsible for the enforcement of the agreement. This the miners rejected, offering a counter proposal including a general increase of 40 per cent. on tonnage, yardage and dead work, a seven-hour day and a half holiday on Saturday. The operators rejected this and countered with an offer that eliminated the provisions in their original counter offer with respect to responsibility for the enforcement of the contract and one that tools and supplies should not be furnished below cost. This offer was in turn rejected by the miners. The operators then suggested the following alternative proposals for compulsory arbitration:

1. That the President appoint a tribunal to adjust the differences.
2. That a tribunal be formed to be composed of four members appointed by the operators, four by the miners, and one member to be designated by the eight so appointed.
3. That a tribunal be formed of three members selected by the operators, three selected by the miners and three by the President of the United States.

These offers were turned down by the miners and Secretary Wilson was asked to take a hand. He proposed a flat increase in mining rates of 27.12 cents per ton; a flat increase in day rates of \$1.58 and a flat increase in yardage and dead work of 31.63 per cent. In calculating his proposed wage advances, Secretary Wilson based his figures on an increase of 79.8 per cent. in the cost of living in three bituminous mining towns since December, 1914. The increase in tonnage rates was arrived at by averaging the balance needed to make the Pittsburgh and Hocking Valley pick rates equivalent to the increase in the cost

of living, with the margin on the same basis in the Indiana and Danville fields. The operators opposed the Wilson figures on the ground that from 80 to 90 per cent. of the mining in the Central Competitive Field is by machine and that that would mean a wage raise of 118 per cent. The day increase, it was claimed, would mean an advance of 131.7 per cent. over the 1914 basis. The miners said they would accept the proposals of the Secretary of Labor, but the operators, refusing to reinstate their first offer, declared that the question would have to be left to the Fuel Administration.

GARFIELD ANNOUNCES BASIS FOR SETTLEMENT

For the next few days, Dr. Garfield was a very active participant in the negotiations. On November 24, he announced the following five principles which he declared should be basic in any consideration of the miners' demands:

"1. The public must not be asked to pay more than it is now paying for coal unless it is necessary to do so in order to provide reasonable wages to the mine workers and a reasonable profit to the operators.

"2. The arrangement entered into between the operators, the mine workers, and the Fuel Administrator, with the sanction of the President of the United States in October, 1917, was intended to equalize the wages of all classes of mine workers and to be sufficient to cover the period of the war, but not beyond March 31, 1920, hence the only increase in cost of living which can now be considered is the increase above that provided for by the average increase in 1917; that is to say, the average total increase in pay over the 1913 base, which was the base considered in 1917, should not exceed the present average increase in the cost of living over the same base. It is also to be considered that the cost of living will fall rather than rise during the next few years.

"3. The maximum prices fixed by the government on coal were calculated to increase production of coal for war purposes. Coal was basic and the increase imperative. The public ought not to be asked to pay and will not now pay the increase over normal profits then allowed for the purpose of stimulating production.

"4. Any increases in wages now arrived at on the basis of the foregoing principles should be borne by the operators or the public or both as may be determined by the application of these principles and should take effect as of the date when the men returned to work.

"5. The needs of the United States are not alone to be considered; Europe is in desperate need of coal and should have all that we can spare."

Spokesmen for the operators in the Central Competitive Field promptly announced their acceptance of the Garfield principles. They also charged that Secretary Wilson and the U. M. W. leaders had "deliberately attempted to convey the impression that the total of the increases granted the miners from 1913 to 1917 is very small and far below the increase in the cost of living during the same time. The comparative figures which they have used for this purpose have been misrepresentative and misleading." Continuing the statement said:

Secretary of Labor Wilson, in presenting his figures, left out of consideration altogether all machine miners and all the day laborers. These men which he eliminated comprise over 80 per cent. of the total number of miners employed in the Central Competitive Field. The pick miners, on whose scale he based his calculations, represent less than 20 per cent. And in passing we wish to advise Secretary of Labor Wilson and the public as well that there are no longer any pick miners—they have transformed themselves into powder miners. The pick scale originally was based on an agreement that men receiving the pick scale wage would undercut the coal by hand with a pick. This was somewhat arduous labor and they were entitled to a higher scale for this character of work. The so-called pick miners, long ago, refused to continue their pick work and for the past several years have blasted off the solid, letting the powder do the work that they were supposed to do with a pick. They are, accordingly, no longer entitled to the higher scale which is allowed for hand pick work.

The increase in the present scale for machine miners in Illinois is a 45 per cent. increase over 1913, in Indiana a 47 per cent. increase, in Ohio a 50 per cent. increase and in western Pennsylvania a 57 per cent. increase. The average increase for all the field was approximately 49 per cent. Men who were paid not on a tonnage basis but by the day comprise approximately 40 per cent. of the total employees in the Central Field. These men have had their wage scale advanced between 1913 and 1919 by 76 per cent. When due weight is given the number of men in the various occupations the present wage scale represents an *average* advance of 58 per cent. over the scale in effect in 1913.

The increase in the actual earnings of the men under this scale is of even greater interest than the increase in the wage scale. According to Percy Tetlow, statistician of the U. M. W., the average earnings of the men in Illinois between 1913 and 1918 increased 97.4 per cent., in Ohio 78 per cent., in Indiana 114 per cent., in western Pennsylvania 82.7 per cent., and in the entire Central Field an average of 90 per cent. This does not indicate any deficit in increases granted the miners when it is remembered that up to October, 1919, the cost of living had advanced only 77 per cent. above the 1913 basis over the country as a whole, while in the mining fields the increase has been substantially less.

In connection with the earnings of the men under the present scale, it should be quite clearly understood that only about 20 or 25 per cent. of the men work steadily. A recent report of the United States Bureau of Labor Statistics shows that pick miners in 1919 were earning only 84.5 per cent. of the amount they could have earned if they had worked steadily during the days the mines were offering them work. It shows further that the loaders after the machines, who comprise the most numerous class of employees, earned only 80.4 per cent. of what they could have earned had they worked steadily on the days when the mines were offering them work. The pay rolls of the mines disclose the fact that the employees who work steadily in any mine are regularly earning from \$175.00 to \$250.00 per month while in many cases individual employees are earning from \$300.00 to \$400.00 per month.

The official figures of the Department of Labor show that the men can increase their earnings from 15 to 25 per cent. merely by working steadily on the days when the mines are running. Plenty of leisure time is afforded the employees on the days when the mines are not able to run because of lack of cars, mechanical breakdowns or other reasons. The producers feel that the wage scale should be fixed with reference to the earning power and opportunity of men who are willing to work steadily and not with reference to the earnings of men who voluntarily absent themselves from work one day out of ever four or five when work is offered. In our opinion the short road to lower cost of living in the United States is less idleness and greater production per man.

The offer of 15 cents per ton and 20 per cent. increase in day work which the operators made in order to settle this controversy, represented an increase over the 1913 scale of 74.5 per cent. in the mining machine scale and 111.3 per cent. in the day wage scale in Illinois, an increase of 77.5 per cent. in the machine mining scale and 111.32 per cent. in the day wage scale in Indiana, an increase of 80 per cent. in the machine mining scale and 111.3 per cent. in the day wage scale in Ohio, an increase of 90.5 per cent. in the machine mining scale and 111.3 per cent. in the day wage scale in western Pennsylvania, making an average increase in wages for all classes of miners over the entire field of 89.1 per cent. Secretary Wilson's proposal means an increase in machine mining rates varying from 98.2 per cent. to 117.7 per cent. over the 1913 basis, with an average of 105.5 per cent. for the entire field. His proposed wage scale advance amounts to an increase of 131.7 per cent. for the entire field. The increase in the cost of living to date, as before stated, is 77 per cent. or less for the miners, and Dr. Garfield points out the fact that it may be expected to decline. Plainly, therefore, the operators, in order to settle this controversy, have already offered the miners much more than they are entitled to.

On the same basis, Secretary Wilson's proposal means an average increase of 111.3 per cent., compared with an increase in the cost of living of only 77 per cent. The mere statement of these figures shows the unjustifiable character of the Secretary's proposal.

GARFIELD ANNOUNCES CABINET UPHOLDS VIEWS

Events moved swiftly in the next few days. Following prolonged sessions of the Cabinet on Tuesday and Wednesday of Thanksgiving week (November 25 and 26), Dr. Garfield announced the decision of the President's Cabinet to uphold his proposal of a 14 per cent. increase at an open meeting of operators and miners Thanksgiving Eve. In explaining why he had fixed upon 14 per cent., the Fuel Administrator said that the prices fixed for 1918, which yielded an average gross margin exclusive of income and excess profit taxes, of 46 cents per ton, had been fixed so as to raise the production to a 600,000,000-ton

basis, whereas only 500,000,000 tons were needed in 1919. Therefore, he concluded that the existing gross margins were greater than necessary to attain the desired 1919 production. Taking the Bureau of Labor statistics on the cost of living, showing an increase of 79.8 per cent. since 1913, he held that "the amount necessary to bring the averages wages of mine workers up to this point at the present time is 14 per cent.

"Readjustments heretofore made since 1913 were such as to give certain classes of mine workers an average increase in excess of the increase on the cost of living and certain others an average increase below the increase in the cost of living. This form of adjustment was made in order to establish or preserve certain relative bases in the mining industry. I do not think this condition, however, ought to result in giving to mine workers as a whole and in consequence imposing on the public as a whole a total average increase in excess of the total average increase in the cost of living because, if this course be stopped, the result would be that the total increased burden placed upon the public will be far in excess of the increase in the cost of living. It seems to me that the reasonable way to deal with this situation is to give the industry as a whole an average increase commensurate with the increase in the cost of living, and then let the amount of the increase be apportioned in accordance with the wage bases that are acceptable to the employers and the employees."

The United States Fuel Administrator was frank to admit that the increase proposed would not effect a permanent solution of the question of wages and living conditions. To provide for future decisions in accordance with the general principles enunciated, he suggested the creation of a permanent consultative body, with purely advisory powers, to consist of the Secretary of the Interior and an equal number of representatives of the operators and the miners. To aid that body he urged that Congress authorize the collection and quarterly publication of statistics covering (1) production, distribution, storage and stocks of coal and coke; (2) cost of production, distribution and the maintenance of suitable stocks and other data deemed pertinent; (3) cost of living in the various coal fields; (4) selling prices and profits obtained by producers, middlemen and retailers; (5) export requirements and conditions limiting them.

The announcement of the 14 per cent. decision raised a storm of protest from the miners' representatives. Acting President Lewis declared that they had understood that Secretary Wilson was the accredited representative of the Cabinet, and indirectly the President, and wanted to know whether the government repudiated his offer of 31.6 per cent. Dr. Garfield replied that he did not understand Secretary Wilson had made a definite offer; that his figures were suggestions for a basis of agreement. Under the Lever act, the President was empowered to control prices. He had delegated that authority to the Fuel Administration. Control of prices and control of wages were inseparable.

PRODUCERS ACCEPT GARFIELD STATEMENT

On Thanksgiving Day the conference of operators and miners adjourned sine die after the miners had rejected the Garfield plan and refused, for the third time, the proffer of arbitration made in accordance with the President's first statement on the coal crisis. Following the adjournment, the operators notified Dr. Garfield that they would accept his proposal although the fact that no advances were permitted would, in their judgment, curtail production. "Recognizing the seriousness of the present crisis," they said, "and the urgent need of the country for coal, we wish to advise you that subject to your approval and conditioned upon the mines resuming operations immediately, the operators' scale committee of the Central Competitive Field accept as a basis for the settlement of the present wage controversy and termination of the strike, the figures submitted by you to the joint meeting of operators and miners held

yesterday evening, namely, an average increase of 14 per cent. to be granted to all classes of mine labor, such increase to be apportioned in accordance with the wage bases that are acceptable to the employes and employers, thus preserving present differentials. Otherwise than as above modified in complete accordance with your proposal, the present contract in all its terms and conditions to be continued in full force and effect until March 31, 1922.

"We have already notified the miners to this effect.

"At the same time we wish to call your attention to the fact that the acceptance of this increase in wages without any increase in selling prices entirely eliminates the profits of a large number of mines. Such a large number, in fact, we fear that the production of coal will be seriously affected. We understand that operating statistics for 1919 are not now in your possession and we shall rely upon the government, when such statistics are properly assembled and presented, to make such adjustments in selling prices as will permit these miners to make such fair and reasonable profit as they are entitled to under the Lever law."

In a statement issued November 29, Dr. Garfield explained at length the basis for his 14 per cent. offer. He said that any analysis of the data supplied by the Department of Labor showed an increase of 79.8 per cent. in the cost of living since 1914 and 57.61 per cent. in wages. Hence the increase proposed would place wages on a parity with the increased cost of living. To increase wages 31.6 per cent. would mean a total increase of 107.4 per cent. in wages as against the 79.8 per cent. increase in the cost of living. "The proposition that a general increase of 31.61 per cent. be given is simply a proposition to give all mine labor the per cent. of increase required to bring the class of labor that has received the lowest per cent. up to the present level of living cost, even though that advances the other groups far above the amount necessary.

"As has been stated, on the basis of the statistics furnished by the Department of Labor, an average advance of 14.1 per cent. would put the increase in the wages of mine workers on a level with the increase in the cost of living. But the National Industrial Conference Board, in its Research Report No. 19, finds an increase in living cost of only 73 per cent. instead of the Department of Labor's figures of 79.8 per cent. Taking 73 per cent. as the increase in the cost of living, the advance required to equalize the wages of mine workers would be only 9.8 per cent.

"The additional wage bill on an annual output of 500,000,000 tons would approximate:

On a 31.61 per cent. advance.....	\$238,000,000
On a 14.1 per cent. advance.....	107,000,000
On a 9.0 per cent. advance.....	74,000,000."

CONTEMPT PROCEEDINGS STARTED AGAINST U. M. W. OFFICIALS

Any hope that any substantial percentage of the striking mine workers would desert their leaders who now held out for the advances proposed by Secretary of Labor Wilson was promptly dissipated. Contempt proceedings were instituted by the government against certain of the U. M. W. officials. The information filed in Judge Anderson's court early in December alleged that the injunction issued by the court had been violated by the defendants:

(a) In passively consenting that said strike is to be continued and enforced as previously announced.

(b) In assuming and maintaining an attitude towards said membership, committees and district and local unions, by announcement through the public press and by statements to and interviews with representatives of the Associated Press and newspapers that said membership and committees will not go back to work, but will remain on strike.

(c) By assuming and maintaining an attitude toward the public to said membership, committees and districts and local unions, that is tantamount to the issuing

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of further strike orders and equivalent to instructions to said membership, committees and district and local unions to keep such strike in effect, and in support of such strike.

(d) In encouraging said strikers to abstain from work, to continue said strike, to remain out of, and not return to the mines in pursuance of said strike order.

(e) In countenancing, aiding, encouraging and abetting the taking of steps by local unions for the payment of strike benefits and the distribution among strikers of sums of money previously accumulated and subsequently acquired to assist such striking miners and mine workers to subsist while striking, and to thereby aid them during the pendency of the said strike.

(f) In conspiring, combining, agreeing or arranging with each other and among themselves, and with each other and other persons, to limit the facilities for the production of coal, and to restrict the supply or distribution of coal, and in aiding and abetting the doing of such acts.

(g) In permitting the said strike order to remain in effect.

(h) In aiding by their general attitude the continuance of said strike in effect.

(i) In communicating to said membership, committees and district unions a so-called withdrawal or cancellation of said strike order, irregular, unusual and different in form and manner of execution from orders regularly sent out and communicated to withdraw and cancel a strike order and terminate a strike.

(j) In communicating to said membership, committees and district and local unions a so-called withdrawal or cancellation of said strike order without the seal of the U. M. W. of A. purporting to be printed thereon.

(k) In communicating to said membership, committees and district and local unions a so-called withdrawal or cancellation of said strike order written upon blank paper instead of being written upon the letterheads or stationery of the U. M. W. of A.

(l) In communicating to said membership, committees and district and local unions a cancellation of said strike order which did not purport to bear the written signatures of the president and secretary-treasurer of said U. M. W. of A.

(m) In communicating to said membership, committees and district and local unions a so-called withdrawal and cancellation, the authority and validity of which, on account of its form and manner of its execution they knew would be questioned, ignored and disregarded.

(n) In failing, neglecting, refusing, when advised and informed that validity and authority of said so-called withdrawal and cancellation notice was being questioned, ignored and disobeyed by the membership, committee and district and local unions, because of its form and its manner of execution, to advise and notify said membership, committees and district and local unions that said so-called withdrawal and cancellation notice was genuine and valid and that it was issued by authority and in good faith for the purpose of withdrawing and canceling said strike order and terminating said strike.

(o) In failing, neglecting and refusing to issue a valid and authoritative withdrawal and cancellation of said strike order, and to communicate such withdrawal and cancellation to said membership, committees and district and local unions as fully and completely as said strike order had been heretofore distributed and circulated to said membership, committee, district and local unions.

STRIKE OFFICIALLY APPROVED?

(p) In receiving detailed reports from membership, committees and district and local unions throughout the jurisdiction of the U. M. W. of A. respecting the refusal of the miners and mine workers to return to work, and in turn, giving out the substance of said reports to the public press under and by their authority as officers of said union, and thereby officially approving the conduct of said membership, committees and district and local unions, and thereby aiding and encouraging them to remain on strike and to concertedly refuse to return to the mines.

Your informant further shows and gives the court to understand that following the receipt by said membership, committees and district and local unions of said so-called withdrawal and cancellation of said order they generally throughout the bituminous coal field assumed the position and stated the fact to be that said so-called withdrawal and cancellation of strike order was not only deficient, invalid and without authority to cancel and withdraw said strike order and to terminate said strike but that if said membership, committees and district and local unions were to recognize it as valid, and return to work in pursuance of its terms, they would then and thereby be violating the rules of their order, and would then and thereby subject themselves to penalties and punishment for such violation, and would then and thereby jeopardize the rights of the district and local unions to retain their charters and, for said reasons, they neglected and refused to return to work in the mines; that full knowledge of said position assumed by said membership, committees and district and local unions, and of the statements and contentions made respecting the invalidity of said so-called withdrawal and cancellation of said strike order, and of their obligations to disregard it, and of the consequences that would follow, as to membership and charters as aforesaid, came to each of said defendants; that they and

each of them fully understood, all and singular, said position, statements and contentions so assumed and made by said membership committees and district and local unions with respect thereto, but have, at all times, remained silent, thereby approving said position and statements and supporting said membership, committees, and district and local unions with reference thereto.

All and singular of which acts, attitude and conduct on the part of said defendants are contrary to the form of statutes in such cases made and provided and against the peace and dignity of the United States.

Coupled with the inauguration of contempt proceedings came the announcement that Judge Anderson would convene a special federal grand jury to inquire into charges of alleged conspiracy between operators and miners to curtail production and to enhance prices.

Up to this point, negotiations had been at least semi-public. But, beginning on December 6, elements not in keeping with the principle of open covenants openly arrived at were injected into the program. On that date the President issued a statement in which he reaffirmed the government's position, appealed to the miners to return to work and renewed his suggestion for the appointment of a commission to pass upon the controversy. Urging the men to accept the temporary 14 per cent. increase agreed to by the operators, the President said:

"By the acceptance of such a plan, the miners are assured immediate steady employment at a substantial increase in wages and are further assured prompt investigation and action upon questions which are not now settled to their satisfaction. I must believe that with a clear understanding of these points, they will promptly return to work. If, nevertheless, they persist in remaining on strike, they will put themselves in an attitude of striking in order to force the government to increase the price of coal to the public so as to give a still further increase in wages at this time, rather than allow the question of further increase in wages to be dealt with in an orderly manner by a fairly constituted tribunal representing all parties interested."

PALMER CONFERS WITH U. M. W. LEADERS

The same day Attorney General Palmer held a conference with Joseph Tumulty, secretary to President Wilson, and Messrs. Lewis and Green. The President's letter, which had not yet been made public, was read to them, and an understanding, the exact basis of which was never satisfactorily explained, was reached. At 12.30 A. M. December 7, Mr. Palmer issued a statement that an agreement had been reached. "At this conference," he said, "there was submitted a definite, concrete proposition from the President looking to a speedy termination of the strike situation and the adjustment of the entire controversy. The officers of the U. M. W., in response to the suggestion of the President, agreed to and have called a meeting of the general scale committee, the representatives of all the district organizations and the international executive board of the U. M. W. to be held in Indianapolis December 9 at which time the President's proposal will be considered and its acceptance by the miners urged by Messrs. Lewis and Green."

On the train from Washington to Indianapolis on December 7, the agreement reached between the government and the miners' representatives, as an outcome of the conference the day before, was initiated by the Attorney General and Acting President Lewis. Attorney General Palmer sent a code message to the Department of Justice on his arrival in Indianapolis containing the agreement initialed on the train. By this agreement, which has come to be known as the Palmer-Lewis memorandum, the men were to return to work immediately under the same conditions that existed previous to November 1, excepting that there was to be a wage advance of 14 per cent. and a commission of three appointed by the President to further investigate conditions and differentials within and between districts. This commission was to have power to determine wages and fix prices of coal and to make its awards

retroactive. The Palmer-Lewis agreement, as accepted by the miners in their conference at Indianapolis December 10, read as follows:

"In accordance with the request of the President, as contained in his statement of December 6, the miners will immediately return to work with the 14 per cent. increase in wages which is already in effect. Immediately upon a general resumption of operations, which shall be in all districts, except as to wages, upon the basis which obtained on October 31, 1919, the President will appoint a commission of three persons, one of whom shall be a mine owner or operator in active business, which commission will consider further questions of wages and working conditions as well as profits of operators and proper prices for coal, readjusting both wages and prices if it shall so decide, including differentials and internal conditions within and between districts. Its report will be made within sixty days, if possible, and will be accepted as the basis of a new wage agreement, the effective date and duration of which shall also be determined by the commission."

DR. GARFIELD RESIGNS AS ADMINISTRATOR

The acceptance of the Attorney General's proposal by the miners was followed by the resignation as Fuel Administrator of Dr. Garfield, who explained in testifying before the Frelinghuysen subcommittee of the Senate that he thought the United States had surrendered a principle in yielding to the miners' demands to the extent of the Palmer-Lewis agreement. He declared that his statement of the 14 per cent. increase was based on a careful compilation of statistics and that an advance of 14 per cent. in wages was sufficient to give the miners an increase commensurate with the increased cost of living; that the lowest group of mine-workers in earning capacity was receiving \$80 a month. He said he had not been consulted on the Palmer proposal, but that he had remonstrated against it and had been disregarded.

STRIKE OFFICIALLY CALLED OFF

The strike recall order, issued December 11, read as follows:

December 11, 1919.

To the Officers and Members of the United Mine Workers of America:

Brothers—On or about December 6 the representatives of the Federal Government made it clear to the International Officers of the United Mine Workers of America that a crisis had arrived in the progress of the bituminous coal miners' strike, which had been in effect since November 1, and that, in the interest of the public welfare, a settlement must be concluded. People were suffering through lack of coal, industries were being closed down and the nation was fast approaching a real calamity, if not disaster. In addition, we were in possession of knowledge which clearly indicated that there was widespread suffering, in many localities, among the members of our organization and their families.

The government officials, however, assured your representatives that they would guarantee just and fair consideration of the demands and grievances of the mine workers through a commission appointed by the President if the mine workers would accept an immediate increase of 14 per cent. in wages and return to work pending final decision of the commission so appointed on the claims we made for a further increase in wages, shorter hours of work and improved conditions of employment.

A memorandum was offered as a pledge of the government that it would, through the instrumentality of a commission consisting of three members, guarantee that a full measure of justice would be accorded the mine workers in the consideration and determination of all their claims. The memorandum follows:

"In accordance with the request of the President, as contained in his statement of December 6, the miners will immediately return to work with the 14 per cent. increase in wages which is already in effect. Immediately upon a general resumption of operations, which shall be in all districts, except as to wages, upon the basis which obtained on October 31, 1919, the President will appoint a commission of three persons, one of whom shall be a practical miner and one of whom shall be a mine owner or operator, in active business, which commission will consider further questions of wages and working conditions as well as profits of operators and proper prices for coal, readjusting both wages and prices if it shall so decide, including differentials and internal conditions within and between districts. Its report will be made within sixty days, if possible, and will be accepted as the basis of a new wage agreement, the effective date and duration of which shall also be determined by the commission."

In order that there may be no confusion in the minds of the membership, we beg to state that the plan of the Federal Government, as embodied in this memorandum, differs materially from the proposition made by Dr. Garfield on November 27 and rejected by the mine workers' representatives. Under the present plan, as set forth in the above memorandum, the mine workers are assured an immediate increase of 14 per cent. in wages, with the probability of further increase in all classifications of labor when the commission finally makes its award. You will note that unless some unforeseen difficulty arises the award of the commission will be made within sixty days, and that the commission has authority to make it retroactive. The Garfield proposition closed the door of hope to the mine workers for any further increase in wages, other than 14 per cent., and made no provision for consideration and determination of the miners' claims for shorter hours and the settlement of internal questions, including differentials within and between districts.

Your International Officers, realizing how grave the situation had become, and, actuated by humane considerations, called a conference composed of the full Scale Committee of the Central Competitive District, the International Executive Board and the District Presidents and their associate representatives from all the outlying districts, to be held at Indianapolis on Tuesday, December 9.

At this conference your International Officers presented all the stubborn facts with which we were confronted, the details of the conference held with the representatives of the Federal Government, and submitted the memorandum incorporated herein. After most thoughtful and thorough consideration by this representative body it was decided to accept the offer of the President of the United States, made through his chosen representatives, as outlined above, and to order a general resumption of work pending a final settlement.

Acting in accordance with the decision of this conference, the undersigned are officially instructing and directing all members of the United Mine Workers of America to resume work immediately. Do not delay return to work a moment longer than is absolutely necessary, because by an immediate resumption of operations the public needs for coal will be promptly met and the moral advantage resulting from such action will be of great benefit to the mine workers in this emergency.

In taking this action we have been compelled to depart slightly from preconceived plans in order to meet this unforeseen crisis which unfortunately has arisen. We ask the mine workers, however, to trust their chosen representatives, to have faith in them, and to wait patiently the vindication of their judgment and action, which we are confident will ultimately come. We can not explain in detail all the circumstances which have arisen and the reasons for the action which your chosen representatives have taken through a circular letter of this kind. For that reason it has been decided that the International Convention will be reconvened, as soon as a general resumption of work takes place and such convention can be called, for the purpose of reporting and explaining to the delegates what has transpired and the reason for the action taken. We are confident when this is done universal approval will be given the course pursued.

Due notice of such reconvened convention will be sent all local unions of the United Mine Workers of America within a very short time. May we impress upon our membership the gravity of the situation? In our opinion we have met a grave emergency in a large and constructive way. Developments will prove the soundness of the judgment exercised at this time and the wisdom of the course which we are pursuing. We earnestly ask the membership of our union to respond to the instructions herein given by returning to work immediately, and we guarantee you, in return, our best efforts and our best service in our continued attempt to bring about, in the largest measure possible, a realization of all the things for which you have so heroically fought.

Except for trouble in Kansas which did not break up until late in the month, this officially ended the strike, and the men soon drifted back to work. It did not, however, end governmental interest in the matter. The Frelinghuysen subcommittee of the Senate, in particular, was anxious to learn the exact details of the Palmer-Lewis conference of December 6, but the Attorney General reiterated his settlement was in line with the program of the President. Dr. Garfield, who took the view that the settlement was wrong, refused to make public his letter of resignation to the President.

For a few days after the strike recall order went out there was some doubt as to the acceptance of the Palmer-Lewis proposal by the operators, who took issue with the Attorney General on the latter's statement that they had been consulted in regard to the Palmer-Lewis memorandum. "This memorandum," they declared, "goes far beyond the Garfield proposal to which we assented.

The Garfield proposal would have established a board with advisory powers only. The Palmer-Lewis agreement would establish a commission, not advisory in character, but with full power definitely to fix prices, wages, differentials and to determine the details of working conditions within each district. Furthermore, the findings of the commission contemplated by the Palmer-Lewis memorandum may be made retroactive, without limitations as to time." Nevertheless, the operators, in a later statement, indicated their willingness to cooperate. On December 20, the President appointed the Bituminous Coal Commission, naming Henry M. Robinson, Rembrandt Peale and John P. White as members. The commission organized in Washington on December 29. Its findings are reported post under the head of the "Bituminous Coal Commission Award."

WHAT THE STRIKE COST THE COUNTRY

Up to the time of the strike, the bituminous production for the year had approximated 402,016,000 tons. The daily average had been 1,554,000 tons, or, upon a full working week basis, a weekly average of 9,324,000. Production during the strike period (November 1-December 13) approximated 31,353,000 tons, or a daily average of 876,472 tons. In other words, the production during the strike period was approximately 56.4 per cent. of the average from January 2 to October 31, 1919. By weeks the production was as follows:

Week ended	Tons	Per cent of normal*
November 8	3,582,000	29.6
November 15	4,024,000	33.3
November 22	5,344,000	44.3
November 29	5,334,000	47.4
December 6	5,245,000	43.5
December 13	5,800,000	48.0
December 20	10,431,000	86.4

*Normal as here used is 12,089,000 tons, the average for the four weeks immediately preceding the strike. It is questionable, however, whether that particular period may be regarded as normal.

The percentage produced by mines reporting to the United States Geological Survey from October 6 to December 27 was as follows:

District	Per Cent. Produced During Week Ended					
	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15
Illinois	68.9	71.1	82.0	74.4	0.0	0.0
Indiana	66.5	70.6	83.7	75.5	0.0	0.0
Michigan	Not reported			83.3	0.0	0.0
Ohio:						
Southern	72.8	72.9	81.6	73.1	0.0	0.0
North and Cent.	80.7	80.0	82.9	67.7	0.0	0.0
Pennsylvania:						
Pittsburgh	90.3	87.2	94.1	74.9	0.0	0.4
Butler-Mercer				84.9	0.0	0.0
Westmoreland	76.7	75.5	81.7	78.0	72.5	78.3
Central:						
P. R.R. mines	84.5	85.7	91.0	72.3	30.5	36.0
N. Y. C. mines ...				75.2	0.6	2.4
B. R. & P. mines..				80.8	8.1	8.1
Somerset	64.7	61.5	85.1	88.0	86.3	87.3
Cumberland-Piedmont..	67.2	69.2	77.8	68.4	1.1	1.5
West Virginia:						
Panhandle	Not separately reported			71.8	25.0	30.4
Fairmont	73.1	69.2	79.3	77.0	0.0	16.4

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District	Per Cent. Produced During Week Ended					
	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15
Winding Gulf	80.1	72.6	76.5	75.2	91.1	92.9
New River				69.1	1.7	25.7
Pocahontas				86.3	92.5	84.8
Kanawha	69.9	66.5	67.9	71.2	11.9	21.4
Logan				71.8	84.2	87.3
Kenova-Thacker ...				76.5	78.5	80.0
Kentucky:						
Hazard	57.7	47.1	58.4	61.9	76.0	79.3
Northeastern	60.1	53.2	69.2	64.0	23.5	48.3
Western	48.9	59.3	72.1	70.3	35.0	37.2
Southern Appalachian..	60.9	52.9	80.2	76.9	0.0	10.7
Harlan	62.7	59.3	59.4	67.2	18.1	24.7
Virginia	79.2	67.1	81.6	90.8	83.3	83.0
Alabama	81.1	81.3	88.3	82.9	44.6	54.3
Iowa	86.4	97.3	93.7	82.3	0.1	0.0
Kansas	75.7	82.0	73.9	49.8	1.1	0.1
Missouri				65.1	1.1	3.3
Arkansas				67.3	0.0	0.0
Oklahoma	71.6	75.0	84.7	78.4	5.5	0.0
Texas				78.8	33.4	35.2
North Dakota				92.9	82.5	61.9
Washington	80.0	87.5	85.1	83.7	2.5	0.0
Montana and Wyoming..				?	?	?
Colorado				75.6	32.1	44.9
Utah				83.9	87.1	88.4
New Mexico				99.0	91.2	?
District	Per Cent. Produced During Week Ended					
	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Illinois	0.0	0.0	0.0	5.6	82.2	87.0
Indiana	0.0	0.0	0.0	13.0	91.5	88.5
Michigan	0.0	0.0	0.0	31.6	100.0	86.6
Ohio						
Southern	0.0	0.0	0.0	10.2	76.0	64.5
North and Cent.	0.0	0.0	0.3	3.1	65.0	66.1
Pennsylvania:						
Pittsburgh	0.4	0.4	0.5	?	85.1	59.1
Butler-Mercer	0.0	0.0	0.0	?	86.9	73.9
Westmoreland	78.0	87.9	83.6	84.2	75.0	62.6
Central:						
P. R.R. mines	37.9	46.0	43.9	47.9	82.6	58.9
N. Y. C. mines	13.1	8.4	4.5	9.0	74.6	64.0
B. R. & P. mines ..	14.2	20.7	28.6	34.3	81.1	65.3
Somerset	89.6	95.6	95.4	88.3	53.3	38.2
Cumberland-Piedmont..	86.3	60.8	4.9	29.3	65.6	61.1
West Virginia:						
Panhandle	35.6	38.7	37.8	42.2	81.2	72.8
Fairmont	70.0	80.5	59.2	84.9	55.6	48.5
Winding Gulf	95.0	95.8	93.4	93.7	82.7	39.5
New River	72.1	73.4	50.8	62.0	88.8	49.9
Pocahontas	89.0	92.6	89.8	82.8	75.3	47.3
Kanawha	80.8	72.3	21.3	36.7	81.5	59.0
Logan	85.2	86.0	88.3	59.8	55.0	56.2
Kenova-Thacker	79.8	83.7	85.8	80.0	79.5	53.9
Kentucky:						
Hazard	64.0	64.0	64.0	64.0	64.0	50.9

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District	Per Cent. Produced During Week Ended					
	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Northeastern	70.4	80.2	87.0	81.6	71.0	44.7
Western	37.5	35.1	39.5	50.7	78.8	52.5
Southern Appalachian..	67.0	47.5	55.3	59.3	79.1	65.5
Harlan	29.6	33.5	36.1	44.3	65.4	35.7
Virginia	83.3	87.3	85.4	90.8	84.8	60.5
Alabama	81.9	82.1	78.3	80.5	89.8	66.1
Iowa	0.0	0.5	0.9	28.9	95.0	93.3
Kansas	1.7	3.4	2.7	2.9	64.7	45.4
Missouri	4.0	3.8	0.7	10.7	88.2	66.9
Arkansas	0.0	0.0	0.0	11.6	84.1	84.8
Oklahoma	5.8	2.3	2.6	2.5	89.0	89.0
Texas	40.3	?	38.7	47.5	79.0	72.8
North Dakota	88.3	?	?	?	?	?
Washington	0.0	0.0	0.0	Reports incomplete		
Montana and Wyoming ..	Reports incomplete					
Colorado	81.6	80.6	85.2	84.3	89.7	88.6
Utah	90.1	75.9	87.8	77.7	78.6	89.0
New Mexico	85.0	80.1	86.5	81.0	83.6	89.2

In studying the foregoing percentages, it should be remembered that all of the districts of the country are not included; among the notable exceptions are the non-union Tug River and Connellsville fields which turned out a heavy tonnage during the strike period. That all of the losses reflected above were not chargeable to the strike must also be borne in mind. Of course, where production was down absolutely, the strike was to blame; the same was true where production was only a small percentage of total capacity, but in other cases transportation and mine disabilities and labor shortages also played their part.

BITUMINOUS COAL COMMISSION AWARD

The United States Bituminous Coal Commission was appointed by President Wilson on December 31, 1919, to settle the wage controversy that had led to the general strike of bituminous miners affiliated with the U. M. W. on November 1, 1919 (see "General Bituminous Strike of 1919," ante). The personnel of the Commission was as follows: Henry M. Robinson, former member of the United States Shipping Board, chairman; Rembrandt Peale, central Pennsylvania operator and member of the labor board created by Dr. H. A. Garfield when United States Fuel Administrator, and John P. White, former international president of the U. M. W. and Mr. Peale's associate on the Garfield board. Presentation of evidence began before the Commission at Washington early in January, 1920, and continued for several weeks. When it came to reach a decision, the Commission was not unanimous. The majority and minority reports, after being held up by the White House for several days, were finally made public on March 23, 1920.

The majority report, signed by Chairman Robinson and Rembrandt Peale, provided:

1. An increase of 24 cents per ton in tonnage rates over the scales effective October 31, 1919.
2. An advance in day labor and monthly men of \$1 per day, except to trapper boys and others receiving less than a man's pay, who are raised 53 cents.
3. An increase of 20 per cent. in yardage, dead work, room turning, etc.
4. The maintenance of the eight-hour day and the six-day week.
5. A biennial contract terminating March 31, 1920.

6. Establishment of tribunals to pass upon other matters in dispute.
7. Powder at cost, including handling, transportation and insurance, and a maximum charge for blacksmithing.

The minority report, signed by John P. White, suggested:

1. Increase of \$1.35 and 75 cents in day and monthly rates.
 2. An eight-hour maximum day, with punitive overtime after April 1, 1921.
 3. Continuance of price fixing until June 1, 1920.
 4. No increase in powder prices over costs of October 31, 1919, and free detonators.
5. Blacksmithing at actual cost.

"The increase in wages to the miners," said Messrs. Robinson and Peale in transmitting their report to the President, "amounts approximately to 27 per cent.; that is, the 14 per cent. average increase granted by the Fuel Administrator when the strike was threatened has been eliminated and a 27 per cent. average increase substituted. Figured in dollars the increase is approximately \$96,000,000 in excess of the advance allowed by Dr. Garfield. This means a total increase in wage cost of \$200,000,000 as compared with the cost on October 31, 1919.

"Our award, as the result of careful scrutiny of all the evidence submitted by the parties in interest and otherwise obtained, grants the miners an advance in wages larger than the percentage of increase in the cost of living submitted by their representatives. Tonnage workers will have received, under this award, an average increase in wages since 1913 of 88 per cent., and day men, part of whose previous advance was based on existing inequalities in compensation rather than on increased living costs, will have received an average advance of 111 per cent.

"The other main point of the U. M. W. contention—a reduction in the working hours from eight to six hours a day, and five days a week—is not granted. We are convinced that a curtailment of productive energy would react not only against the whole population but against the miners themselves. It is essential that the miners shall have living wages. It is likewise essential in the public interest that there shall be no let down in production. We express the opinion that had we shortened the day by one hour, it would be equivalent to an additional cost of over \$100,000,000.

"We have sought and believe that we have found some of the principal reasons for the weakness in this uncertain and troubled industry, and we offer a method for remedying the most important of these conditions. The time has come for the people of the country, of which labor constitutes a large part, to look beyond temporary wage settlements and consider the general welfare, first, of the general public itself, then, of the employes and employers.

"A wage settlement for the moment is not a correct or adequate answer to the problem. The coal industry has been on an unsound basis for years, because of its seasonal character and the resulting car shortages and car service intermittencies. The heavy movement of bituminous coal comes in the fall and winter. Inevitably, with the buying and movement limited to one season, there is a great car shortage which limits production. When the market drops in the spring and summer there are idle men, idle mines, and idle cars. From the standpoint of employers and employes, the industry has yielded a hazardous return.

"The solution of the problem is to bring about evenness of production and distribution. This can be done by the cooperation of the railroads, public utilities and steel companies as consumers, on the one side; and of the operators, the Interstate Commerce Commission, the banks, and the Federal Reserve System, on the other side. We believe that the Federal Reserve Banks

will view favorably the eligibility of commercial paper based upon coal purchased and stored by the railroads and public utilities in the dull seasons. Some of the leading railroads have given assurances of their cooperation. Others approached have not.

"If virtually complete cooperation is assured, it will result in time in a substantially even production, continuous employment, and even distribution throughout the year. The small consumer will then not have to compete with the large consumer in the winter, and will not be at the mercy of the practice of commandeering on the grounds of priority. Until this is done, wage costs must of necessity be high, but when this is accomplished prices should be more reasonable, employment more continuous, and the industry better stabilized. The present and extravagant waste would then be eliminated.

SHORTER WORK DAY WOULD REACT ON INDUSTRY

"The mine workers themselves, we feel sure, recognize that no other remedy will be adequate. A shortening of the working day would seriously affect production, add additional workers to the industry, and increase the present unsettled condition. This decreased production would in turn add still further to the cost of living, hitting the workmen in other industries, and continue the folly of such pyramiding."

In the discussion of this particular subject the report itself stated:

"We recognize that joint agreements resulting from conferences should be carried out fully and frankly by both parties, and that every proper assurance to this end should be given, since it is obvious that all attempts at amicable settlements of controversies will now and forever be futile unless the principle is once and for all established that agreements entered between employers and employes are binding upon both parties and are not to be considered as mere scraps of paper. For that reason, we believe that the fulfillment of joint agreements, entered into in any given district, should also be guaranteed by the national officers of the U. M. W. of A. and that it should be the duty of the officers of the national organization, as well as that of the officers of the district, to see that all such agreements are carried out both in letter and in spirit.

"We have gone fully into the mine workers' demand for a six-hour day and a five-day week, equivalent to a reduction of working hours from 48 to 30 per week.

"In considering this demand, we were influenced in arriving at our decision by the fact that steady work on the part of all workers is urgently required by the entire world during the period of reconstruction and reorganization when the enormous destruction and disorganization wrought by the World War in all countries and affecting all industries must be counteracted by unusual industry and perseverance. To make any restriction affecting the output would be an economic crime.

"It is claimed by the miners on the basis of experience after previous reductions of hours of labor and of the effects of reduction of hours in other countries, that curtailment of working time would not reduce the output in anything like a corresponding proportion. It is our view that arguments based on the effects of a reduction from 10 to 8 hours can hardly apply to a reduction from 8 to 6 hours, or from 8 to 7 hours. Production in countries where there has been a reduction in hours is less than before the hours were reduced. We feel that our responsibility to the nation will not permit us to make an award that would curtail appreciably the productivity of the workers in a basic industry.

"Each coal company endeavors to have enough men on its rolls to carry it over the peak of the rush season; the operators want coal mined while there

is a demand, each company realizing that, if it is unable to satisfy its customers, they will turn to other producers and the sale will be permanently lost. A labor supply, sufficient for the needs of the rush season, is excessive during the rest of the year, part time employment results and the nation will ultimately have to pay in its fuel bills the cost of maintaining this larger army of only partially employed workers.

REDUCTION WOULD MAKE BAD SITUATION WORSE

"We are convinced that a reduction in hours of labor would only make a bad situation worse, that the miners' demand on this point is clearly uneconomic, and that to grant it would be detrimental to their own interests.

"Another result that would flow from a reduction in hours with the wages that it is proposed should be paid, will be to increase the number of men who will seek employment at the mines on account of the shorter hours and the full pay, and this in turn, will result later in further demands for the shortening of hours in order to give employment to the men who would thus be added to an industry that is already overmanned. We can not, in view of our responsibilities, agree to a demand that would lead to such disastrous results. At the same time, we hope to accomplish something in the direction of the stabilization of the industry by means of constructive proposals discussed elsewhere in this report.

"While we are in full sympathy with the miners in their aspiring for a fuller life, we can not help but feel that eight hours a day is not too much to work under present circumstances.

"The contention that the extra hazardous nature of the mining industry makes it desirable to reduce the risks run by the miners by reducing the time during which they are exposed to this risk is inconsistent with the claim that the miners wish to work the same number of hours per year as they are working now, provided the hours are more evenly distributed through the year, for if they work as many hours, they will be exposed to the same risks. We have also considered the fact that contractual hours of labor apply only to day workers, and that more than 60 per cent. of the miners work on a tonnage basis. To reduce the number of earning hours during the year, particularly when one of the chief complaints of the miners is that they do not have sufficient hours of work and consequently can not earn adequate wages, would clearly not be consistent with the commission's conception of its duty.

"Therefore, our conclusion is that, under all the conditions, the eight-hour day should be maintained."

According to the majority report approximately 80 per cent. of the total tonnage moved since October 31, 1919, has moved under contracts, providing for an increase in cost to the purchaser equivalent to the increase in costs resulting from an increased wage scale. "This statement," the commission explains, "was made in order that there may be no misunderstanding on the part of the public and the public rate-making authorities."

CONFISCATION PRACTICES CONDEMNED

The report stated that for many years the railroads, and especially the coal carrying railroads, have depended on a practice of commendeering coal assigned to other customers. In some degree, public utilities have counted on this form of priority. The railroads are consumers of about 30 per cent. of the total coal production of the country. "We have presented to certain of the executives of the larger systems a request that the railroads accept the principle that it is their duty to the public to move coal, in the months that normally are months of low movement, to consumption terminals, such movements to be in excess of their then needs, thereby gradually accumulating a three months' supply before the winter, the railroads to come out at the end of the winter

with possibly 20 or 30 days' supply on hand. This movement would be more economical than the movement in the winter, and, from the standpoint of the coal railroads at least, the lower cost of movement would, to a great degree, offset any cost of storage."

The commissioners believed that the public utilities, too, had a duty to perform to the public and that they should not rely on any form of priority when the pressure comes in the winter, and to this end that they should be called upon to move and store coal in the summer months in excess of their needs, going into the winter months with 60 days' supply in storage. The commissioners felt that these two groups owed this as a duty, and that in both cases, if there was an increased cost, it would be recognized by the rate-making authorities. In the case of the public utilities, it was in effect stated by a representative that he believed this plan or principle was sound.

The next largest group of coal consumers is the steel industry. The commissioners presented the problem to certain of the heads of important steel concerns, including the United States Steel Corporation, and they expressed an intention of increasing storage of coal and movement of the same in the months of low movement along the lines of the plan here suggested.

WHAT AWARD PROVIDES

The text of the award read as follows:

"We hereby award that all the terms, conditions, and provisions, mining rates, and wage schedules in effect on October 31, 1919, in what is known as the Washington agreement, dated October 6, 1917, and the agreements preceding the Washington agreement, to which the Washington agreement is supplemental and upon which it is predicated, applying to the Central Competitive Field and the outlying districts, shall be written into the agreement for which these findings constitute a basis, except as the same may be modified by the awards and recommendations hereinafter set forth.

"As a modification of the terms of the agreements above recited, we award:

"A. That the following specific awards shall constitute the basis upon which wage agreements in all districts shall be predicated. They are not subject to negotiations, but shall be written into all agreements and schedules of wages.

"B. That the 14 per cent. average increase in wages fixed by the United States Fuel Administration shall be eliminated on March 31, 1920, and in lieu thereof the wage scale of the Washington agreement, referred to, shall be increased as set forth herein.

"C. That the agreement for which this award constitutes a basis shall take effect April 1, 1920, and continue in effect up to and including March 31, 1922.

"D. That the mining prices for mining mine-run coal, pick and machine, shall be advanced 24 cents per ton.

"E. That in the block-coal field of Indiana, and in other localities that are still on the screened-coal base, the usual methods of applying the tonnage rates shall continue. This also has its application to districts that have a joint understanding in applying wage increases to low coal.

"F. That all day labor and monthly men (the advance to monthly men to be based on an average of the usual number of days he is required to work in a month), except trappers and other boys, be advanced \$1 per day. Trappers and boys receiving less than men's wages to be advanced 53 cents per day.

DEAD WORK ADVANCED 20 PER CENT.

"G. That all yardage, dead work, and room turning be advanced 20 per cent; *Provided, however*, That nothing shall prevent the representatives of the miners and operators in any district, in joint conference, from taking the flat equivalent of the 20 per cent. and applying it to yardage, dead work, and room turning,

if by so doing they will make for uniformity and maintain the differentials. Failing, however, to agree to such application, then the 20 per cent. shall be applied on the existing rates, effective October 31, 1919.

"H. That the decisions, which hereinbefore appear in the body of this report and which are hereinafter summarized, are to be incorporated, according to the letter and spirit of the said decisions, in the agreements to be drawn between the miners and operators; and that the said decisions shall constitute the basis upon which the wage agreements in all districts shall be predicated. They are not subject to negotiations, but shall be written into all agreements and schedules of wages. However, the several joint-scale committees may, by mutual agreement, make such proper adjustment of local conditions as may come within the terms and scope of this award, and of the Washington agreement, dated October 6, 1917, and of the agreements preceding the Washington agreement, to which the Washington agreement is supplemental, as more fully set forth in clause No. 6 of the joint agreement of the Central Competitive Field, dated March 9, 1916. These decisions are summarized as follows:

1. That the fulfillment of the agreement to be entered into shall be guaranteed by the international union, and the fulfillment of joint agreements entered into in any district shall also be guaranteed by the officers of the international organization, as well as by the officers of the district, and it shall be their duty to see that all such agreements are carried out both in the letter and in the spirit.

EIGHT-HOUR DAY UPHELD

2. That the eight-hour day in effect on October 31, 1919, in what is known as the Washington agreement, dated October 6, 1917, and the agreements preceding the Washington agreement, to which the Washington agreement is supplemental, applying in the Central Competitive Field and outlying districts, shall be written into the agreements for which these findings constitute a basis.

3. That the pushing of cars, loaded or empty, by the mine workers is natural to the industry and is an integral part of the day's work, and that through the negotiations of 30 years this work, where practiced, has been paid for in general in the tonnage rates.

4. That pending the joint district agreement between the miners and operators covering a fair schedule of rates for piecework or tonnage operation of any new device or machinery, the right of the operator to introduce and operate any such new device or machinery shall not be questioned, and his selection of such men as he may desire to conduct tests with or operate such device or machinery shall not be in any way interfered with or obstructed by the miners or their representatives, provided the wages offered are at least equal to the established scale rates for similar labor.

The operator shall be privileged to pay in excess of the established scale rates of pay without such excess pay being considered as establishing a permanent condition for the operation of said device or machine.

After the device or machine shall have passed the experimental stage and is in shape to be introduced as a regular component part of the production of coal, then for the purpose of determining a permanent scale of rates (such rates to continue until the joint scale conference above referred to fixes a scale) for operating such device or machine the mine workers may have a representative present for a reasonable time to witness its operation, after which a schedule of rates shall be determined by mutual agreement, which scale shall be concluded within 60 days after a fair test has been made.

The test will disclose the labor-saving in the cost of producing coal, out of which labor-saving the mine worker shall receive the equivalent of the contract rates for the class of work displaced, plus a fair proportion of the labor-saving effected.

In like manner new or untried systems of mining: for instance, long wall, retreating long wall, or the panel system may be introduced by the operator for the purpose of conservation, increasing production, the lessening of cost, or in the interest of safety without his right to make such change being abridged: *Provided, however*, That for this class of work the mine worker shall in the same manner receive the equivalent of the contract rates for the class of work displaced, plus a fair proportion of the labor-saving effected.

5. That a commission be selected by the scale committee of miners and operators in the Central Competitive Field, respectively, which shall study the differentials hereinafter set forth as to working conditions, wage earnings, production costs, and competitive relations, as well as the check-off system of collecting dues for the U. M. W. of A., the award of such commission to become part of the wage agreements in the districts affected.

OUTLINES QUESTIONS TO BE CONSIDERED

The commission shall consider:

- a. The differential between pick and machine mining rates in Indiana.
- b. The thick and thin vein differential in the Pittsburgh district.
- c. The seven-cent machine differential in Illinois.
- d. The differential in tonnage rates in southern Illinois.
- e. The discontinuance of the check-off system of collecting dues for the

United Mine Workers of America.

We furthermore recommend that this commission shall be composed of eight members, one mine worker and one operator from each district in the Central Competitive Field; also that the expense of this commission shall be borne by the mine workers and operators affected, each paying one-half; and that the commission so constituted shall make a report to the regular joint conference of the Central Competitive Field, to be held at the expiration of the agreements based upon this award.

6. That if and when, during the life of the agreement to be drawn by the joint wage conference (which agreement is to be predicated upon this report), such boards and tribunals as recommended by the President's industrial conference are set up, they shall be employed in connection with the investigation of questions of controversy between miners and operators; *Provided, however*, That in the event that no such machinery is created, that a board of inquiry and adjustment for the bituminous coal industry shall be created and maintained under the said joint agreement—this board to consist of a chairman and two other representatives appointed by the President; two representatives of the mine workers selected by the mine workers; and two representatives of the mine operators selected by the mine operators—and that matters in controversy between the bituminous coal miners and operators be submitted thereto; that the expense of such board be borne by the mine workers and operators equally; and that such tribunal, board, or commission shall immediately undertake the investigation of the questions in controversy, and shall publish within 60 days its findings of fact, and if not unanimous, then in separate reports, and that pending such report no general strike shall be called: *Provided, however*, That if no report is published within the designated period, then a retarding of the strike shall end.

7. That the price at which house coal shall be furnished the mine workers at the tipple shall be determined by adding to the price in effect on October 31, 1919, the average percentage allowed as an increase on the wage scale, to wit, 27 per cent., and that when the coal is delivered to the miners' houses by the operator the actual cost of delivery shall be added.

8. That for the purpose of the new agreement the prices charged the miners for blacksmithing shall be on the basis of existing contracts; providing, however, that the maximum charge shall not exceed three-fourths of one per cent. of the miners' gross earnings.

9. That explosives shall be furnished the miners at cost, which is to include handling, transportation, and insurance.

SPECIAL WAGE SITUATIONS TREATED

10. That since the miners and operators have agreed in joint conference to the establishment of a joint commission for the purpose of making an investigation within the Kanawha, Paint Creek, and Cabin Creek fields for the possible correction of inequalities in order to bring about a more uniform condition, but have had no opportunity to present their report to the joint conference, and as both the operators and miners have asked that the findings of this commission be written into the new joint agreement, which is to be predicated on this report, we direct that the mine workers and operators compose their differences in harmony with the report of the joint commission referred to, and that the findings of that commission be written into the agreement.

11. That the mine workers of district No. 12, Illinois, and the Illinois Coal Producers' Association, respectively, shall each select two members of a joint commission to study the situation in northern Illinois, Assumption, Ill., and Decatur, Ill., as to wage earnings, working conditions, production costs, and competitive relations, which commission shall report its findings to the next regular joint conference of the Illinois mine workers and operators following the expiration of the agreement for which this award constitutes a basis. The expense of this commission shall be borne by the mine workers and operators affected, each paying one-half.

12. That the U. M. W. of District 10, Washington, and the Washington Coal Producers' Association, respectively, shall each select two members of a commission and the four members so selected shall appoint an experienced mining engineer, who shall also be a member of the commission. This commission shall, within 30 days from appointment, investigate and report to the joint conference of mine workers and operators of the State of Washington, the effect of the application of the awards herein set forth to the agreements and wage schedules in that State. In the meantime, the awards herein shall not apply in Washington. The expenses of this commission shall be borne by the mine workers and operators affected, each paying one-half.

"I. That the above summary shall in no way modify the decisions and awards set out in this report.

"In addition to the above summary of the awards the following specific recommendations are made:

"(1) That an executive order be issued instructing all federal departments and other federal agencies to purchase, transport, and store at the point of consumption, where such action may be practicable, an estimated three months' winter supply of bituminous coal before July 1 of each year.

WOULD INVOKE AID OF DEFENSE COUNCIL

"(2) That the Council of National Defense assume the duty of obtaining the support of the general public, particularly the large consumers, in the stabilization of the coal industry through the purchase, transportation, and storage at the point of ultimate consumption of its winter supply of coal—this to be done during the spring and summer months.

"(3) That an executive memorandum be issued to the Interstate Commerce Commission transmitting to that body a copy of this report with the findings, awards, and recommendations, to the end that the Interstate Commerce Commission may aid in the solution of the problems herein outlined, and in the hope that the Interstate Commerce Commission will give particular attention to the questions of seasonal freight rates, car supply, and car distribution, as well as the problem of railway coal purchase for storage.

"(4) That executive authority be issued permitting the transmission to the governors of the various states, to county and municipal authorities, and to the various state railway and public utility commissions copies of this report and of the specific recommendations made therein; and that the state railway and public utility commissions make use of their influence with the various public utility corporations looking toward the early purchase and storage of coal by these corporations reflecting, if necessary, the excess cost of such storage in authorized rates, and also to the end that instructions may issue from state, county, and municipal authorities directing the purchase and storage of three months' supply of coal on or before July 1, of each year, by and for the use of the states, counties, and municipalities, particularly on public works and in public buildings.

SEASONAL FREIGHT RATES RECOMMENDED

"(5) That the Interstate Commerce Commission consider the possible effect of a graduated seasonal freight rate that is lowest in the spring and a monthly graduated increase in rates until the late fall.

"(6) That copies of this report with its findings, awards, and recommendations be transmitted to the carriers to the end that they may be enabled to cooperate, particularly in regard to car construction and distribution, coal storage, and the elimination of the practice of commandeering.

"(7) That a copy of this report be transmitted to the Federal Reserve Board to the end that federal reserve banks be asked to favor as eligible for rediscount paper drawn against coal in storage.

"(8) That the Interstate Commerce Commission, state railroad and public utility commissions, within their jurisdictions, issue, where lawful, rules controlling car distribution among mines, to the end that no particular mine or mines may be permitted to obtain through a practice of car assignment and guarantees, preferential car service.

"(9) That carriers, and, if necessary, the Interstate Commerce Commission and the various state railway commissions, within their jurisdictions, issue the instructions necessary to abolish the practice whereby purchasing agents of carriers use the company's control over car supply to force down the price of railway fuel.

RAILROADS SHOULD USE LESS VALUABLE COAL

"(10) That the operators in supplying their quota of fuel to the railroads avoid, except in emergencies, the use for that purpose of coal whose properties make it more valuable for other uses.

"(11) That all data relating to the mining, distribution, and consumption of bituminous coal be coordinated and correlated periodically and regularly by some one federal agency such as the Interdepartmental Board of the Council of National Defense, in order that it may be available for any committee or commission hereafter called upon to investigate controversies between operators and miners in the bituminous coal industry.

"(12) That operators endeavor to plan their operations in such a way that improvement may be made in camps and housing adequate for the maintenance of the American standard of living, giving due consideration to the physical conditions involved, and recommend that when houses are to be constructed by operators that they shall be of modern type, based upon the probable life of the mine, with good sanitation; that rentals shall be based on the actual investment in houses and land; that the return should include no profit to the operators; that rentals be only sufficient to maintain the structures in good condition, provide for the amortization of the investment cost and proper insurance, and return not to exceed six per cent. on the invested capital while such sum is invested, and that where the expected life of the operation exceeds 25 years, the period of amortization should be 25 years, but in no other event should the amortization period be less than the expected life of the property.

"(13) We recommend that the good offices of the miners' international organization be exercised to maintain the principle that has been stated by the mine workers who appeared before us covering their approval of the introduction of labor-saving devices and machinery.

"(14) That the making of advances on miners' pay be discouraged in every way, and, if for any good reason an advance is asked and made, it shall be made without discount, either directly or indirectly.

AGAINST ABUSE OF CAR PUSHING

"(15) That the operators give careful consideration to the alleviation of abuses in car pushing where they exist, in order that ameliorating practices may be introduced.

"(16) That representatives of the miners and operators in Alabama, Tennessee, eastern Kentucky, and Maryland arrange to put into effect the award herein set out, to the end that industrial peace and tranquillity may prevail.

"(17) That your commission be discharged from its duties upon the signing of the agreement specified, and that all files, records, and property of this commission be then transferred to the custody of the Council of National Defense, and that on June 30, 1920, the files and records of this commission be consolidated with the files of the Fuel Administration.

"In submitting this report particular attention is called to the fact that herein every effort has been made for the protection of the public, not only for the period under which this protection can be guaranteed by the Executive under the powers granted him by the Lever act, but it has been our effort to go into the underlying causes for high costs and to offer some remedy therefor—this, in order that in the future, when the government relaxes its control over prices, there may be a continuing force at work in the public interest.

"We believe it is obvious that unless some changes can be made toward the end of reducing costs in coal production and distribution, no act of Congress, no order of the Executive, nor any other regulation by constituted authority can in the end provide against the continuing high costs. It is for this reason that we believe that this industry should be placed upon the proper basis for more continuous and thus more economical production and distribution, with the result that the cost of coal to the people will be reduced."

MINORITY REPORT SUMMARIZED

The principal points in which the minority report submitted by John P. White differed from that of the majority may be summarized as follows:

(1) That all day labor and monthly men, except trappers and other boys, be advanced \$1.35 per day, and that trappers and boys receiving less than men's wages be advanced 75 cents per day.

(2) In certain states, notably Pennsylvania, Indiana and Illinois, there are differential rates which constitute grievances of long standing. The transportation and other conditions upon which these differentials were originally based, contended Mr. White, has ceased to exist. A readjustment of these differentials to their proper base can under no circumstances add any to the cost or burden to the public. The majority report, he claimed, evaded the adjustment of the issues involved, merely referring them back to joint conferences to which the miners have been taught to look in vain for the adjustment of this particular grievance. Without adjustment on this point certain important districts can not be stabilized. Mr. White sought to afford an opportunity for decisive settlement by recommending the constitution of a tribunal to determine the equitable solution of the points at issue. This tribunal was to be composed of two representatives selected by the miners' international officials and two selected by the officials of the coal operators' association, together with a fifth and disinterested member to be selected by the Secretary of the United States Department of Labor. He proposed that the awards of this tribunal should become effective the first day of the month following the conclusion of its findings.

(3) The majority report made no recommendation as to payment for handling soap stone. Mr. White's recommendation practically extended the general principles embodied in the former recommendations to this part of the miner's work.

(4) Mr. White recommended that western Kentucky differentials be referred in the first place to a joint conference and, failing settlement, to a tribunal such as is recommended in the case of the other disputed differentials.

(5) Mr. White denied that car pushing is a natural condition in the industry, and recommended that this matter be referred back to district joint conferences.

(6) Mr. White recommended that present arrangements as to hours continue in effect until March 31, 1921; but that, beginning April 1, 1921, the maximum hours for employees should not exceed eight hours underground per day and six days per week.

These were the points, consideration of which Mr. White held vital to the future stability of the bituminous industry. He felt that the country should grant the half million workers in its coal mines, rates which would guarantee health and a minimum of comfort. This, he said, the award would not do. But, as it did once more bring the mine-workers' earning power nearer to the ability to win "a bare subsistence for his family," he accepted it "rather than cause the country further trouble at this critical time." He stood firm, however, upon the belief that his recommendations represented the absolute minimum upon which, as a basis, there could be any hope of industrial tranquillity in the basic industry which he represented.

BITUMINOUS WAGE SCALES IN 1919-20

The bituminous wage scales in the United States during the first eleven months of 1919 were controlled by the terms of the so-called Washington agreement of October, 1917. During 1918 a number of efforts had been made to modify these rates and terms, but to such proposals, Dr. H. A. Garfield, then United States Fuel Administrator, declined to give his assent. With the

armistice came a renewal of the demands made by the leaders of the restive workers, but this was met with the claim that the agreement did not expire until March 31, 1920. Early in 1919, the policy committee of the United Mine Workers' organization met and formulated claims, among other things, for a 60 per cent. increase in pay, a six-hour day and a five-day week. These proposals were indorsed by the delegates to the biennial convention of the U. M. W., held at Cleveland in September. As set out in more detail elsewhere in this volume under the caption of "The General Bituminous Strike of 1919," operators and miners failed to come to an understanding as to new rates and a general strike in the unionized fields began November 1, 1919. Some weeks later, upon government intervention, the operators accepted the proposal of Dr. Garfield for a 14 per cent. advance, effective December 1, but this failed to bring the men back to work. Later President Wilson appointed the United States Bituminous Coal Commission. This body handed down a decision, effective as of April 1, 1920, making an advance of approximately 27 per cent. in the rate of pay.

All of these various agreements are based upon the scale of wages in effect April 1, 1916. Each supplemental agreement had the effect of building up upon that contract, and even the findings of the United States Bituminous Coal Commission are grounded upon the 1916 contract. Two general wage advances were granted in the bituminous coal fields of the country in 1917, one in April and one in October. The drift of labor away from the mines attained such proportions early in 1917, however, that when the miners made a demand for higher wages to offset the rising cost of living the operators assented without much opposition.

Again, in the fall, when another plea for more money was advanced, the producing interests made a favorable decision contingent upon the Fuel Administration allowing them to increase prices sufficiently to cover the extra labor cost. This the Administration agreed to do, provided that both sides agreed to a form of contract which sanctioned the penalizing of strikes and lockouts. As soon as the operators and miners of the various districts adopted the approved form of working agreement, an increase of 45 cents per net ton in the price of coal in the districts involved went into effect. The wage agreement entered into in April called for an advance of 10 cents a ton in the mining rate in western Pennsylvania, Ohio, Indiana and Illinois, and a 20 per cent. increase to day labor, with the proviso that the amount of the latter increase should not be less than 60 cents a day in any event. Substantially the same advance was granted in other bituminous districts.

ANOTHER WAGE ADVANCE IN OCTOBER, 1917

The autumn wage conferences were held in Washington, and on October 6 the following agreement was entered into:

It is agreed—

(1) That the mining prices for mining mine-run coal, pick and machine, in the present contract be advanced 10 cents per ton.

In the block coal field of Indiana the screen coal price to be advanced 12½ cents per ton.

(2) That all day labor and monthly men except trappers and other boys be advanced \$1.40 per day. Trappers to be advanced 75 cents per day. Boys now being paid more than \$1.00 per day and less than men's wages shall be advanced \$1.00 per day.

(3) That all yardage, dead work and room turning be advanced 15 per cent.

(4) Subject to the next biennial convention of the United Mine Workers of America, the mine workers' representatives agree that the present contract be extended during the continuation of the war, and not to exceed two years from April 1, 1918.

WHEREAS, Stoppage of work in violation of the agreement has become so serious as to menace the success and perpetuity of the U. M. W. of A. and our joint relations, this conference instructs the respective district executive boards to meet the operators in their various districts for the purpose of agreeing on a penalty clause

where none now exists, and if necessary meet to amend and strengthen existing clauses so as to make the penalty more effective in preventing strikes and violations of agreements.

All fines provided for in the agreement shall be automatically collected, and any operator failing to collect and forward to proper parties such fine shall pay a penalty of \$2.00 for each employe subject to be fined, the same to be collected and retained in the miners' district organization. And in no case shall any fine be refunded except by mutual agreement of the accredited representatives of the operators and miners.

It is further agreed that where any employe enters suit in the civil courts to recover any fine collected in accordance herewith the district organization shall reimburse the operator for expense incurred on account of such suit.

This agreement is subject to and will become effective only on condition that the selling price of coal shall be advanced by the United States Government sufficient to cover the increased cost in the different districts affected, and will take effect on the first day of the pay period following the order advancing such increased prices.

In accordance with the terms laid down in the Garfield proposal made November 26, the following notices were posted at the mines in the Central Competitive District:

"The Government of the United States having decided that mine workers are entitled to a 14 per cent. average increase to bring wages up to the increased cost of living, this company gives notice that a 14 per cent. average increase in wages is hereby granted, effective at once. This average increase will be so divided as to preserve present differentials. No change be made in conditions of employment. The new scale of wages will be posted as soon as possible."

The terms of the agreement reached in the Central Competitive Field in March, 1920, to cover the two years ending March 31, 1921, made in accordance with the provisions of the award and findings of the Bituminous Coal Commission, read as follows:

We hereby agree:

1. All coal shall be weighed and paid for on a mine-run basis, except that the Block Coal District of Indiana shall continue upon the present screen coal basis and that the usual method of applying tonnage rates shall continue.

2. The pick-mining rate in the thin vein district of western Pennsylvania shall be \$1.11.64 per ton and in the eastern Ohio, Hocking, Cambridge and Amsterdam-Bergholz districts of Ohio the mining rate shall be \$1.11.64 per ton, and throughout the balance of Ohio the pick-mining rate shall be advanced 24 cents per ton upon the pick-mining rate in effect October 31, 1919; in the bituminous district of Indiana \$1.08 per ton, and in the Danville District of Illinois \$1.08 per ton.

3. Machine mining in the thin vein district of western Pennsylvania 94 cents per ton; in Ohio 94 cents per ton; in the bituminous district of Indiana, chain machine mining 96 cents per ton and punching machines 98 cents per ton; in the Danville District of Illinois 98 cents per ton.

4. That all day labor and monthly men (the advance to monthly men to be based on an average of the usual number of days he is required to work in a month), except trappers and other boys, be advanced \$1 per day. Trappers and boys receiving less than men's wages to be advanced 53 cents per day. All on the wage scales in effect October 31, 1919.

5. Dead work yardage and room turning is advanced 20 per cent. on the prices being paid October 31, 1919.

6. That the eight-hour day in effect on October 31, 1919, shall continue. An eight-hour day means eight hours' work in the mines at usual working places for all classes of inside day labor. This shall be exclusive of the time required in reaching such working places in the morning and departing from the same at night.

Drivers shall take their mules to and from stables, and the time required in so doing shall not include any part of the day's labor, their work beginning when they reach the change at which they receive empty cars, but in no case shall the driver's time be docked while he is waiting for such cars at the point named.

When the men go into the mine in the morning they shall be entitled to two hours' pay, whether or not the mine works the full two hours. But after the first two hours the men shall be paid for every hour thereafter by the hour, for each hour's work or fractional part thereof. If for any reason the regular routine work can not be furnished the inside labor for a portion of the first two hours the operators may furnish other than the regular labor for the unexpired time.

7. All internal differences are hereby referred to the various districts for settlement with the understanding that only by mutual consent shall anything be done in sub-district, district or wage scale conventions that will increase the cost of

production or decrease the earning capacity of the men. All rules now incorporated in existing contracts shall remain in force until changed by agreement between operators' and miners' representatives.

8. The practice of voluntarily paying more than the contract price, either by bonuses or otherwise, which is done ordinarily for the purpose of enticing employes from other mines, and thereby creating discord and disorder in the coal industry, is condemned. It will therefore be assumed in future joint conferences convened for scale-making purposes that all bonuses or advances in excess of wages provided in contract were paid because of physical conditions in or around mines where such methods are practiced, and the wages so paid shall be considered the base price for such mines.

9. Whereas, stoppage of work in violation of the agreement has become so serious as to menace the success and perpetuity of the U. M. W. of A. and our joint relations, this conference instructs the respective district executive boards to meet the operators in their various districts for the purpose of agreeing on a penalty clause where none now exists, and if necessary meet to amend and strengthen existing clauses so as to make the penalty more effective in preventing strikes and violations of agreements.

All fines provided for in all agreements shall be automatically collected, and any operator failing to collect and forward to proper parties such fine shall pay a penalty of \$2.00 for each employe subject to be fined, the same to be collected and retained in the miners' district organization. And in no case shall any fine be refunded except by mutual agreement of the accredited representatives of the operators and miners.

It is further agreed that where any employe enters suit in the civil courts to recover any fine collected in accordance herewith the district organization shall reimburse the operator for expense incurred on account of such suit.

10. That the fulfillment of this agreement is guaranteed by the international union, and the fulfillment of joint agreements entered into in any district shall also be guaranteed by the officers of the international organization, as well as by the officers of the district, and it shall be their duty to see that all such agreements are carried out both in the letter and in the spirit.

11. That the pushing of cars, loaded or empty, by the mine workers, is natural to the industry and is an integral part of the day's work, and that through the negotiations of 80 years this work, where practiced, has been paid for in general in the tonnage rates.

12. That the prices at which house coal shall be furnished the mine workers at the tippie shall be determined by adding to the price in effect on October 31, 1919, the average percentage allowed as an increase on the wage scale, to wit, 27 per cent., and that when the coal is delivered to the miners' houses by the operator the actual cost of delivery shall be added.

13. That for the purpose of the new agreement the prices charged the miners for blacksmithing shall be on the basis of existing contracts providing, however, that the maximum charge shall not exceed three-fourths of 1 per cent. of the miners' gross earnings.

14. That explosives shall be furnished the miners at cost, which is to include, handling, transportation, and insurance.

15. This contract is effective on April 1, 1920, and shall remain in force until March 31, 1922.

Resolved, That an interstate joint conference be held prior to April 1, 1922; the time and place of holding such meeting is referred to a committee of two operators and two miners from each state herein represented, together with the International officers of the United Mine Workers' organization.

(Note: Paragraph eleven is not designed to interfere with existing arrangements relating to car pushing or prevent miners and operators from working out mutually satisfactory arrangements with reference thereto.)

As for several years past, the Central Competitive Field agreement is the basis upon which other district contracts are made. Since the promulgation of the foregoing agreement, contracts have been agreed upon in other fields.

ANTHRACITE WAGE SCALES

Final adjustment of the anthracite wage scales for the two-year period beginning April 1, 1920, had not been made at the time this edition of THE COAL TRADE went to press. The matter was in the hands of a special Presidential commission appointed after joint committees of the operators and the miners had failed to reach an agreement. The personnel of the commission named by President Wilson is as follows: William O. Thompson, Columbus, Ohio, president of the University of Ohio; Neal J. Terry, McAdoo, Pa., member

of the executive committee of the miners' organization, and William L. Connell, Scranton, Pa., representing the producers. This commission was named early in June with instructions to report within 60 days.

The miners' original demands, presented to the operators in March, were as follows:

(1) We demand that the next contract be for a period of not exceeding two years, and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

(2) We demand that the contract wage scales be increased 60 per cent. and that the increase secured in the supplemental agreements of 1917 and 1918 shall be included in the wage scale as the basis upon which the 60 per cent. shall be added, and that all day men be granted an increase of \$2 per day.

(3) We demand that a uniform wage scale be established, so that the various occupations of like character at the several collieries shall command the same wage and that shovel crews operating for coal companies shall be paid not less than the rates paid by contractors to shovel men.

(4) We demand that a work day of not more than six hours from bank to bank be established for all classes of inside and outside day labor, and monthly men coming under the agreement five days per week, the uniform rates to be the basis upon which the advance above demanded shall apply, with time and half time for overtime and double time for Sundays and holidays.

(5) We demand the closed shop contract, which means full recognition of the U. M. W. of A. as a party to the agreement.

(6) We demand that all dead work shall be paid for on the consideration basis existing at the colliery, and that where more than one miner is employed, they shall receive the same rate.

(7) We demand payment for all sheet iron, props, timber, forepolling and cribbing and where miners are prevented from working on account of lack of supplies, that they be accorded the opportunity of making a shift at some other work at the consideration rate.

(8) We demand in the settlement of grievances that the aggrieved parties shall have the right to demand settlement upon a basis of equity, and if such equity settlement is required, the conditions of 1902 shall not enter into or prejudice the case.

(9) We demand that a uniform rate of 17 cents per inch be paid for all refuse in all kinds of mining up to ten feet wide, and a proportionate rate over ten feet.

(10) We demand that wherever practicable, coal shall be paid for on the legal ton basis and that dockage shall be eliminated.

(11) We demand that on all reel motors, one motorman and two brakemen be employed and that on all other motors and engines, assistants or patchers be employed and that when motormen or engineers are repairing their motors or engines, that their assistants shall be employed to help in the work.

(12) We demand that for all tools lost through no fault of employees as a result of squeezes, water or fire, the men to be compensated for such loss.

(13) Where contract miners are employed doing company work, the company shall supply them with the necessary tools and failing to do so, shall compensate the miners by paying each miner not less than one extra hour per day for the use of such tools and that the company shall supply to all company men the necessary tools free of charge.

(14) We demand that check docking bosses and check weighmen shall be permitted to serve as members of the mine committees.

(15) We demand that where contract miners encounter abnormal conditions in their working places, they shall have the privilege of going on consideration work, and the definition of consideration work shall be written into the agreement.

(16) We demand that the supplemental agreement, which terminates with the declaration of peace, shall be continued until the expiration of the contract and that our officers be instructed to immediately notify the representatives of the operators of this decision.

(17) The committee recommends that the scale committee to negotiate the contract shall be composed of the officers and the executive board members of three districts, together with the resident international officers and three mine workers from each district affected, the district president to select the three mine workers in each district, subject to the approval of the executive board.

OPERATORS REJECT DEMAND; WILSON SUGGESTS COMPROMISE

These demands were promptly rejected by the operators, and joint committees were appointed by the conferees to work out an agreement. Preliminary to detailed negotiations it was agreed that any wage award would be retroactive from April 1, 1920. After some discussion, the miners abandoned their original demands and were reported to be willing to accept an average increase of 27 per cent., in line with the award of the Bituminous Coal Commission in the

soft coal fields (see page 294). The operators refused to meet this modified demand, as well as certain other features of the miners' program. When it became apparent that agreement was impossible, the government, through Secretary of Labor Wilson, took a hand and met with operators and miners, but with no more success than had attended the earlier negotiations.

Secretary Wilson framed a scale which had the initial approval of the international officials of the U. M. W., but which was rejected unanimously at a special convention of mine-workers held at Wilkes-Barre, Pa., May 24-27. The terms of this agreement were as follows:

1. Agreement to be made with the U. M. W. of A. of the first part.
2. Agreement to run for a period of two years.
3. Contract rates at each colliery to be increased 65 per cent. over the 1916 basis. This means an increase of 17.8 per cent. over the present gross earnings, or an increase of 19.5 on net earnings.
4. Increase for outside and inside day men who receive from \$1.54 up to be 65 per cent. on the 1916 basis, plus an increase of \$1.20 per day, with a minimum rate of \$4 per day and a maximum of \$6 per day. This means an increase of from 66 cents to 75 cents per day over present wages.
5. Employes receiving less than \$1.54 per day to be increased 80 cents per day over present wages. (This provision refers solely to boys.)
6. Contract miners' laborers to receive the same increase as company laborers, and the companies to bear their share of the increase, as is now the case.
7. Monthly men to receive an increase of 65 per cent. on their 1916 basis plus \$30 per month, it being understood that the increase over present rates shall not be less than \$20 nor more than \$30 per month.
8. Employes of stripping contractors to receive the same increase as received by those in similar occupations at the collieries.
9. Increases to be applied on the work day established in 1918, whether eight hours or more.
10. Inside pumpmen and outside and inside hoisting engineers working twelve hours to be put on an eight-hour basis, the conciliation board to work out the new eight-hour rates. Until this rate is fixed by the board the men affected to continue on present basis of increase and hours.
11. Board of conciliation to act as a commission to study and report to the next conference on uniform day rates.
12. Tools lost by contract miners through squeezes, caves, etc., to be replaced by company.
13. Contract miners when reporting for duty and shut out of work shall be given opportunity for other places of work at the established rates for such work, provided such work or places are available.
14. Permitting contract miners to report deficient or abnormal conditions to the foreman and if they disagree the case to be taken up as other grievances are handled.
15. Agreement to be signed by the officers of the U. M. W. of A. and the coal operators.

The miners agreed to the suggestion of President Wilson for the appointment of a commission—a proposal to which the operators had already given assent—and the commission was named a few days later.

WAGE SCALES IN EFFECT IN 1916-17-18

The base scale upon which, presumably, the decision of the commission will be grounded, goes back to 1916. Between the negotiation of that scale and April 1, 1920, however, three upward revisions have been made. Two of these were made effective in 1917, the third was promulgated on November 1, 1918. This third change, approved by United States Fuel Administrator Garfield, and followed by an increase of \$1.05 per gross ton in the maximum permissible prices on domestic sizes of anthracite, represented, according to statements of the Administration's engineers, an actual increase of 74 cents per ton in production cost. The higher increase permitted in domestic sizes to cover this was justified by the Fuel Administration on the ground that it would not be possible to absorb the proportionate share of the increase in steam prices. Indeed, when price control was relinquished on January 31, 1919, Dr. Garfield admitted that the then existing maxima were at least 50 cents per ton too low and that many operators in the hard coal regions had been producing and selling coal at a loss.

The terms of the November 1, 1918, advance provided that:

- (a) Contract hand and machine miners shall be paid an advance of 40 per cent. on their gross earnings.
- (b) Consideration miners shall be paid an advance of 25 per cent. plus \$1 per day for each day worked.
- (c) Contract miners' laborers shall be paid an advance of 40 per cent. on their earnings. As this increase of 10 per cent. over the agreement of November 17, 1917, is less than \$1 per basic shift, the difference between said increase of 10 per cent. in the rate and \$1 per basic shift shall be assumed by the operator.
- (d) Consideration miners' laborers shall be paid an advance of 25 per cent. plus \$1 per day for each day worked.
- (e) Day machine miners' laborers who received not less than \$2.72 per day shall be paid an advance of 25 per cent. plus \$1 per day for each day worked.
- (f) Outside blacksmiths, carpenters, electricians, machinists, firemen, hoisting engineers on shafts and slopes where employment is limited by law or by the award of the Anthracite Coal Strike Commission to eight hours per day, and engineers working on a 12-hour shift basis, shall be paid an advance of \$2 per day for each day worked. All other outside company men who received \$1.54 or more per day shall be paid an advance of \$1.80 per day each day worked.
- (g) Inside engineers and pumpmen working on a 12-hour shift basis shall be paid an advance of \$2.20 per day for each day worked. All other inside company men who received \$1.54 or more per day shall be paid an advance of \$2 per day for each day worked.
- (h) All employees paid by the day who received less than \$1.54 per day shall be paid an advance of \$1.20 per day for each day worked.
- (i) Monthly men coming under the agreement of May 5, 1916, shall receive an advance per day for each day worked, equivalent to that provided for their respective occupations under paragraphs (f) and (g).
- (j) The advances of \$2.20 per day, \$2 per day, \$1.80 per day, \$1.20 per day and 25 per cent. plus \$1 per day provided above, are to be applied to a day, whether eight hours or more, as established under the agreement of May 5, 1916; any proportionate part of a day to be paid a proportionate part of the advance herein provided.
- (k) The employees of stripping contractors, paid by the day, working on the basis of a nine-hour or twelve-hour shift, shall be paid the same increase per hour for each hour worked that is provided for outside company men working on an eight-hour basis.

The increases were based on the wage scale of May 5, 1916, which is the contract under which miners and mine operators are operating, and which was modified May 17, and December 17, 1917, on account of war conditions.

Wages in various mines are not identical to the cent, and an absolute interpretation of the scale in dollars and cents as to every mine worker is therefore impossible. A memorandum was submitted to the Conference of National Labor Adjusting Agencies, as being fairly typical of the general situation. In some instances the wage increase received was materially less, and in some instances materially more, than the tabulation, which is as follows:

OUTSIDE				
Occupation	Base cents per hour		Outside adjustment cents per hour	Rate cents per hour
Blacksmith .....	.32	.35	.25	.57 .60
Carpenter .....	.32	.35	.25	.57 .60
Shaft Engineers .....	.36	.40	.25	.61 .65
Firemen .....	.23	.28	.25	.48 .53
Machinery Repairmen ....	.30	.32	.25	.55 .57
Laborers .....	.195	.235	.225	.42 .46
INSIDE				
	Inside Base		Adjustment	Rate per day
Contract miners	\$5.63		\$1.00	\$6.63
Avg. per start, August 18				
Contract laborers .....	.26		.40 30% plus \$1.00	\$3.70 to \$5.16
Consideration miners .....	.40		.45 25% plus 1.00	5.00 to 5.50
Per ton				
Company miners .....	.32		.35 .25	.57 .60
Inside laborers .....	.26		.29 .25	.51 .54

TEXT OF AGREEMENT OF APRIL, 1917

The full text of the first change made in the wage scales of 1916—virtually a new agreement dated April 25, 1917, was as follows:

WHEREAS, On May 5, 1916, an agreement was entered into by the parties hereto covering wages and working conditions in the Anthracite Field of Pennsylvania for the four-year period beginning April 1, 1916, and ending March 31, 1920, and

WHEREAS, By reason of conditions that have arisen as a result of the war, the parties hereto have deemed it advisable and necessary to increase the wage compensation provided in said agreement as hereinafter more specifically set forth,

THEREFORE, THIS AGREEMENT WITNESSETH:

FIRST: That, for the period May 1, 1917, to March 31, 1918, the compensation paid employes in the Anthracite Field shall be increased as follows:

(a) Contract machine and hand miners shall be paid an advance of 10 per cent. on their gross earnings.

(b) Consideration miners shall be paid an advance of 10 per cent. on their earnings, based on the rates now in effect.

(c) Contract miners' laborers, and consideration miners' laborers, shall be paid an advance of 10 per cent. on their earnings, based on the rates now in effect. Day machine miners' laborers receiving not less than \$2.72 per day shall be paid an advance of 10 per cent. on their earnings.

(d) Company men, now receiving \$1.54 or more per day shall be paid an advance of thirty-six cents (36c.) per day for each day worked.

(e) All employes paid by the day and now receiving less than \$1.54 per day shall be paid an advance of thirty cents (30c.) per day for each day worked.

(f) Monthly men, coming under the agreement of May 5, 1916, shall be paid an advance of thirty-six (36c.) per day for each day worked.

(g) The advances of thirty-six cents (36c.) per day and thirty cents (30c.) per day above provided are to be applied to a day, whether eight (8) hours or more, as established under the agreement of May 5, 1916; any proportionate part of a day to be paid a proportionate part of the advances herein provided.

SECOND: It is distinctly understood and agreed between the parties hereto that because of the situation that has arisen as a result of the war and the needs of the nation in the matter of fuel supply, there shall be no unnecessary shutdowns; and that the employes will give that full cooperation necessary to maintain the production of the mines at their fullest capacity.

THIRD: It is further agreed that, except as hereinbefore provided, all of the covenants and conditions of the agreement of May 5, 1916, shall remain in full force and effect up to and including March 31, 1920.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be properly executed this twenty-fifth day of April, nineteen hundred and seventeen.

TERMS OF SECOND AGREEMENT OF 1917

The second demand for higher wages came in the fall of 1917. It was finally acceded to by the operators after a joint conference in Washington, with the understanding that the Fuel Administration would allow an increase in hard coal prices sufficient to cover the higher labor costs. The Administration authorized a 35-cent increase, which the producing interests agreed to accept, although they contended that they were justly entitled to 45 cents more. This second agreement, which was signed on November 17, 1917, was as follows:

AGREEMENT OF NOVEMBER 19, 1917

WHEREAS, On May 5, 1916, an agreement was entered into by the parties hereto covering wages and working conditions in the Anthracite Fields of Pennsylvania for the four-year period beginning April 1, 1916, and ending March 1, 1920;

And Whereas, By reason of conditions that arose as a result of the war, the parties hereto under date April 25, 1917, entered into a supplemental agreement modifying the wage compensation provided in said agreement on May 5, 1916;

And Whereas, By reason of further changes in conditions which have arisen since the date of said supplemental agreement of April 25, 1917, the parties hereto have deemed advisable and necessary to make further increase in the wage compensation provided in said supplemental agreement as hereinafter more specifically set forth;

NOW, THEREFORE, THIS AGREEMENT WITNESSETH:

That in lieu of the voluntary advances made under the agreement of April 25, 1917, the following advances are purposed to be applied to the rates established under the agreement of May 5, 1916:

(a) Contract hand and machine miners shall be paid an advance of 25 per cent. on their gross earnings.

(b) Consideration miners shall be paid an advance of 25 per cent. on their earnings.

(c) Contract miners' laborers shall be paid an advance of 30 per cent. on their earnings.

(d) Consideration miners' laborers shall be paid an advance of 25 per cent. on their earnings.

(e) Day machine miners' laborers, who received not less than \$2.72 per day, shall be paid an advance of 25 per cent. on their earnings.

(f) Outside engineers working a 12-hour day cross-shift, and firemen, shall be paid an advance of \$1 per day for each day worked. All other outside company men, who received \$1.54 or more per day, shall be paid an advance of 90 cents per day for each day worked.

(g) Inside engineers and pumpmen, working a 12-hour cross-shift, shall be paid an advance of \$1.10 per day for each day worked. All other inside company men, who received \$1.54 or more per day, shall be paid an advance of \$1 per day for each day worked.

(h) All employees paid by the day, who received less than \$1.54 per day shall be paid an advance of 60 cents per day for each day worked.

(i) Monthly men coming under the agreement of May 5, 1916, shall receive an advance per day for each day worked, equivalent to that provided for their respective occupations under paragraphs 'f' and 'g.'

(j) The advances of \$1.10 per day, \$1 per day, 90 cents per day and 60 cents per day, provided above, are to be applied to a day, whether eight hours or more, as established under the agreement of May 5, 1916; any proportionate part of a day to be paid a proportionate part of the advances herein provided.

(k) The employees of stripping contracts, paid by the day, working on the basis of a 9-hour or 10-hour shift, shall be paid the same increase per hour for each hour worked that is provided for outside company men working on an 8-hour basis.

It is understood and agreed that except as herein provided all of the covenants and conditions of the agreement of May 5, 1916, shall remain in full force and effect.

And it is further understood and agreed that this contract will become effective only on condition that the selling price of coal shall be advanced by the United States Government sufficient to cover the increased cost of production and will not take effect until the first day of the pay period following the order granting such increased price.

Subject to the foregoing provision, the contract will remain in effect during the period of the war, or until March 31, 1920, in case the war is not terminated before that date.

HOURS WORKED IN UNITED STATES MINES IN 1918

The length of the working day in the bituminous mines of the United States in 1918, as shown by the reports of the United States Geological Survey, was as follows:

State	Eight hours		Nine hours		Ten hours		All others
	Mines	Men	Mines	Men	Mines	Men	
Alabama	235	24,129	3	72	8	872	1,148
Arkansas	74	3,416	1	8	1	13	541
Colorado	169	13,741	1	99	1	2	641
Illinois	454	85,320	3	33	...	...	612
Indiana	255	28,612	1	15	...	...	1,749
Iowa	125	12,242	1	12	...	...	1,074
Kansas	141	9,672	...	...	...	...	993
Kentucky	376	26,601	93	5,271	55	4,363	3,107
Maryland	85	5,334	...	...	...	...	234
Michigan	21	2,526	...	...	...	...	32
Missouri	149	8,685	5	99	2	31	775
Montana	44	4,470	...	...	2	8	81
New Mexico	32	4,023	1	34	...	...	38
North Dakota	16	464	1	15	9	142	207
Ohio	635	46,184	9	242	15	645	1,379
Oklahoma	109	7,777	2	109	1	10	555
Oregon	1	30	...	...	...	...	10
Pennsylvania (bit.) ...	1,698	151,586	146	7,439	52	4,198	11,083
Tennessee	109	8,380	5	422	2	849	1,043
Texas	16	2,074	15	855	6	577	430

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	Eight Hours		Nine Hours		Ten Hours		All Other
	Mines	Men	Mines	Men	Mines	Men	Men
Utah	26	4,111	1	5	...	...	44
Virginia	84	8,916	16	1,034	8	514	540
Washington	51	5,070	...	...	...	...	39
West Virginia	915	58,782	263	23,540	54	3,385	3,823
Wyoming	51	7,194	...	...	...	...	360
Totals	5,871	529,339	567	39,304	216	15,609	30,538

PRODUCTION OF PIG IRON

Pig iron production, as shown by the reports of the American Iron and Steel Institute, decreased 8,039,280 gross tons in 1919. The production, according to fuel used, and by states, during recent years has been as follows:

	1914	1915	1916	1917	1918	1919
Anth. and coke...	91,464	84,753	217,788	381,048	283,592	138,337
Charcoal	263,924	296,152	372,411	376,525	348,877	327,097
Coke	22,976,856	29,535,308	38,844,598	37,889,824	38,421,175	30,549,930
Total	23,332,244	29,916,213	39,434,797	38,621,216	39,054,644	31,015,364

The anthracite figures above include mixed anthracite and coke pig iron; the charcoal figures cover a small tonnage made with charcoal and coke and the coke figures also include ferro-alloys made with electricity.

State	1914	1915	1916	1917	1918	1919
Massachusetts	6,594	7,802	5,719	10,527	12,485	13,678
Connecticut .....	...	...	...	...	...	...
New York	1,559,864	2,104,780	2,352,535	2,417,527	2,871,118	2,070,288
New Jersey	9,733,369	12,790,668	16,506,284	15,539,728	15,198,271	12,276,585
Pennsylvania	195,594	251,548	501,452	422,212	373,817	244,002
Maryland	271,228	251,346	399,885	520,311	513,737	319,409
Virginia	1,826,929	2,049,453	2,762,885	2,953,705	2,587,852	2,130,092
Alabama .....	...	...	...	...	...	...
Ga., Ky., Texas, ...	236,393	291,040	554,590	561,951	594,675	413,091
West Virginia	216,738	177,729	355,374	369,951	369,822	190,514
Tennessee	5,283,426	6,912,962	8,602,895	8,518,603	8,764,132	7,102,627
Ohio	1,847,451	2,447,220	3,922,512	3,456,915	3,440,307	2,558,213
Illinois	1,557,355	1,986,778	2,221,708	2,657,503	3,073,599	2,715,659
Indiana, Mich.	329,526	372,966	811,325	738,541	750,366	605,619
Wisconsin .....	...	...	...	...	...	...
Minnesota	267,777	271,921	437,633	453,742	504,463	375,587
Mo., Iowa, Colo., Mont., Wash., Ore., Cal. }	...	...	...	...	...	...
Total	23,332,244	29,916,213	39,434,797	38,621,216	39,054,644	31,015,364

Total production by grades during the past 20 years is shown in the next tabulation excerpted from the reports of the American Iron and Steel Institute:

Years	Basic	Bessemer	Foundry	Malleable	Forge	All Other	Total Gross Tons
1900...	1,072,376	7,979,327	3,376,445	173,413	793,092	394,589	13,789,242
1901...	1,448,850	9,596,793	3,548,718	256,532	639,454	388,007	15,878,354
1902...	2,038,590	10,393,168	3,851,276	311,458	833,093	393,722	17,821,307
1903...	2,040,726	9,989,908	4,409,023	473,781	783,016	312,798	18,009,252
1904...	2,483,104	9,098,659	3,827,229	263,529	550,836	273,676	16,497,033
1905...	4,105,179	12,407,116	4,758,038	635,236	727,817	358,994	22,992,380
1906...	5,018,674	13,840,518	4,773,011	699,701	597,420	377,867	25,307,191
1907...	5,375,219	13,231,620	5,151,209	920,290	683,167	419,856	25,781,361

Years	Basic	Bessemer	Foundry	Malleable	Forge	All Other	Total Gross tons
1908...	4,010,144	7,216,976	3,637,622	414,957	457,164	199,155	15,936,018
1909...	8,250,225	10,557,370	5,322,415	658,048	725,624	281,789	25,795,471
1910...	9,084,608	11,245,642	5,260,447	843,123	564,157	305,590	27,303,567
1911...	8,520,020	9,409,303	4,468,940	612,533	408,841	229,910	23,649,547
1912...	11,417,886	11,664,015	5,073,873	825,643	469,183	276,337	29,726,937
1913...	12,536,693	11,590,113	5,220,343	993,736	324,407	300,860	30,966,152
1914...	9,670,687	7,859,127	4,533,254	671,771	361,651	235,754	23,332,244
1915...	13,093,214	10,523,306	4,843,899	829,921	316,214	309,659	29,916,213
1916...	17,684,087	14,422,457	5,553,644	921,486	348,344	504,779	39,434,797
1917...	17,671,662	13,714,732	5,328,258	1,015,579	345,707	545,278	38,621,216
1918...	18,646,174	13,024,966	5,145,260	1,117,914	393,932	726,398	39,054,644
1919...	14,494,131	9,975,934	4,916,758	1,009,049	271,286	348,206	31,015,364

FURNACES IN BLAST

Furnaces in blast June 30, 1919, and December 31, 1919, together with the total number of furnaces and the production by states or groups of states for the first and second halves of the past year were as follows:

States	Blast Furnaces— December 31, 1919				Production—Gross Tons	
	In blast Jun. 30, '19	In	Out	Total	First half of 1919	Second half of 1919
Massachusetts ...	0	1	0	1	4,914	8,764
Connecticut	0	0	2	2		
New York	15	16	11	27	1,140,040	930,248
New Jersey	2	1	3	4		
Pennsylvania	75	112	53	165	6,010,549	6,266,036
Maryland	1	4	1	5	129,548	114,454
Virginia	3	6	12	18	193,111	126,298
Alabama	17	22	22	44	990,122	1,139,970
Georgia	0	0	4	4	211,058	202,033
Texas	0	0	1	1		
West Virginia ...	1	2	3	5		
Kentucky	1	4	3	7		
Mississippi	0	0	1	1	109,919	80,595
Tennessee	2	7	9	16		
Ohio	48	54	25	79	3,952,117	3,150,510
Illinois	12	19	6	25	1,435,249	1,122,964
Indiana	11	13	3	16	1,514,697	1,200,962
Michigan	12	10	2	12		
Wisconsin	2	4	4	8	332,109	273,510
Minnesota	2	3	0	3		
Missouri	2	2	1	3	254,742	120,845
Colorado	3	0	6	6		
Oregon	0	0	1	1		
Total	209	280	173	453	16,278,175	14,737,189

All tonnage statistics given are in gross tons.

FOREIGN TRADE IN OIL

Mineral oil has been a factor in the foreign commerce of the United States since 1862, when the first statistical record of imports and exports of this commodity appears. A review of its subsequent importance in the foreign trade of the country was recently published by the Division of Statistics of the United States Bureau of Foreign and Domestic Commerce.

So rapid has been the growth of this trade that in the fiscal year ended June 30, 1919, mineral oil ranked first in order in magnitude of quantity in imports and second in exports. Its comparatively low value, however, places it fifth in value in exports and far down the list in value of imports. In 1862 exports of mineral oil, both crude and refined, were 5,829,929 gallons, valued at \$1,539,027. Fifty-five years later, in 1917, these exports reached the peak, aggregating 2,748,328,485 gallons, valued at \$230,968,940, but fell in 1919 to 2,529,064,893 gallons, valued at \$344,233,216, a decrease of eight per cent. in the quantity, but an increase of 49 per cent. in value.

Despite the fact that the United States is the world's largest producer and exporter of mineral oils, imports have grown from a total of only 211 gallons, valued at \$141 in 1862, to the enormous amount of 1,978,951,092 gallons, valued at \$28,612,799, in 1919. When compared with 1914, the last prewar year, this is an increase of 150.1 per cent. in the quantity, and of 109.4 per cent. in the value.

The oil industry was begun in America in 1859, in which year the production of crude petroleum in the United States was estimated at 2,000 barrels. In 1860 production rose to 500,000 barrels, and it has climbed steadily since to the high record of 350,131,000 barrels for the calendar year 1918. The output of the United States from 1859 to 1918, inclusive, makes a grand total of 4,602,775,000 barrels of 42 gallons.

A total production of 350,131,000 barrels, valued at \$690,190,000, in 1918, places petroleum third in the value of mineral products of the United States. Bituminous coal led, with a production valued at \$1,465,000,000, and pig iron was next, valued at \$1,180,759,565.

There has been a tremendous increase in the demand for petroleum products within the past few years, owing to the extensive use of automobiles, motor trucks, farm tractors, motor boats, submarines, and aeroplanes, and to the use of petroleum as a substitute for coal.

PETROLEUM AS A SUBSTITUTE FOR COAL

The world is rapidly adopting the oil-burning ship, according to "Lloyd's Register of Shipping," which shows that of 3,801,221 tons classed in all countries of the world, 1,193,659 tons, or 211 vessels, were equipped to use oil for fuel, in addition to 63 oil tankers of 360,405 tons. The use of oil by the United States merchant marine is growing by leaps and bounds, as evidenced by the fact that this country already has 438 oil-burning steel ships, and of 720 vessels now under construction 636 are to be oil burners. The Shipping Board estimates that 60,000,000 barrels of oil will be required in 1920 to supply its own vessels, but, it should be noted, has been experiencing no little difficulty in endeavoring to have these requirements filled.

During the past two years many industrial plants substituted petroleum for coal. This movement gained considerable headway in the large textile and paper mills, and even in small industries in the New England section. It was claimed that, besides a large saving in labor, there was an actual saving in the cost of fuel at the prices of coal and oil. The substitution of petroleum as a domestic fuel was also forecast when New York City amended its regulations to permit the use, properly regulated, of fuel oil for firing heating plants in skyscrapers, apartment houses and private dwellings. With the advancing costs and decreasing supplies, however, much of the 1918-19 enthusiasm for fuel oil has burned itself out, and less and less has been heard from it as a strong competitor of coal during recent months.

Although the production of mineral oil has increased from a little less than 266,000,000 barrels during the year ended December 31, 1914, to more than 350,000,000 barrels in 1918, imports of mineral oils have increased steadily, reaching a total of 1,978,951,092 gallons, valued at \$28,612,799, in the year ended June 30, 1919, against 791,137,399 gallons, valued at \$13,665,940 in 1914, and 1,403,727,624 gallons, valued at \$21,926,370 in 1918. These imports are mostly crude oil and come chiefly from Mexico, with comparatively small quantities from Peru and Trinidad, all of which arrives by tank steamers. With the single exception of 45 gallons in 1916, no oil imported from Mexico was entered across the Mexican border during the past six years.

Imports of crude oil from the principal sources of supply for the past six fiscal years are shown in the following table:

	1914 Gallons	1915 Gallons	1916 Gallons
Mineral oil, crude	773,052,480	653,707,517	869,369,363
Mexico	737,712,569	637,352,593	834,023,131
Trinidad and Tobago	14,597,633	2,113,862	24,515,134
Peru	20,710,023	13,996,020	10,626,487
	1917 Gallons	1918 Gallons	1919 Gallons
Mineral oil, crude	1,034,590,849	1,347,543,144	1,930,095,105
Mexico	1,019,087,126	1,346,666,866	1,927,543,709
Trinidad and Tobago	8,205,096	.....	1,046,729
Peru	6,009,717	907	.....

The following table, prepared by the United States Geological Survey, shows the world's production of crude petroleum in 1918 and from 1857 to 1918 by countries:

Country	Production, 1918			Total production, 1857-1918		
	Barrels of 42 gallons	Metric tons	Per cent. of total	Barrels of 42 gallons	Metric tons	Per cent. of total
United States	355,927,716	47,457,029	69.15	4,608,571,719	614,476,230	61.42
Mexico	63,828,327	9,506,289	12.40	285,182,489	42,564,549	3.80
Russia	40,456,182	5,520,066	7.86	1,873,039,199	247,856,218	24.96
Dutch E. Indies*	13,284,936	1,836,914	2.58	188,388,513	25,465,114	2.51
Rumania	8,730,235	1,214,219	1.70	151,408,411	21,058,193	2.02
India	8,000,000	1,066,667	1.55	106,162,365	14,154,982	1.41
Persia	7,200,000	†1,000,000	1.40	14,056,063	2,952,231	.19
Galicia	5,591,620	777,640	1.09	154,051,273	21,424,303	2.05
Peru	†2,536,102	338,147	.49	24,414,387	3,255,251	.33
Japan & Formosa	2,449,069	326,543	.48	38,498,247	5,133,100	.51
Trinidad	2,082,068	289,578	.40	7,432,391	1,033,712	.10
Egypt	2,079,750	277,300	.40	4,848,436	646,458	.07
Argentina	1,321,315	192,612	.26	4,296,093	617,176	.06
Germany	711,260	†100,000	.14	16,664,121	2,254,974	.22
Canada	304,741	40,632	.06	24,425,770	3,256,769	.33
Venezuela	190,080	26,400	.04	317,823	44,142	.02
Italy	35,953	†5,000		973,671	138,588	
Cuba .....	.....	.....	.....	19,167	2,662	.....
Other countries..	.....	.....	.....	397,000	55,139	.....
Total	514,729,354	69,975,036	100.00†	7,503,147,138	1,006,389,791	100.00

*Includes British Borneo. †Estimated. ‡Estimated in part.

Exports of fuel and gas oil, owing to the heavy demand for war purposes and to its rapidly increasing use as a fuel, increased from 475,143,205

THE COAL TRADE

gallons in 1914, to 1,223,283,641 gallons in 1918, but fell to 898,044,039 gallons in 1919. More than 50 per cent. of the total exports of fuel and gas oil in the past six years went to the United Kingdom, and more than 20 per cent. to Canada. Chile received more than 127,000,000 gallons in 1917, but only about 36,000,000 gallons in 1919.

The following table shows the countries to which the United States shipped fuel and gas oil during the past six fiscal years, and the quantity taken by each:

Countries	1914 Gallons	1915 Gallons	1916 Gallons
Austria-Hungary	12,138,109	6,900	.....
Belgium	6,405,564	1,066,639	.....
Denmark	1,401,050	5,910,803	9,419,069
France	5,953,507	2,663,670	3,218,778
Germany	9,629,156	2,613,598	.....
Gibraltar .....	.....	13,232,359	2,176,692
Italy	4,218,066	35,669,007	41,526,666
Netherlands	9,145,058	18,126,322	11,170,285
United Kingdom	197,989,519	347,293,156	477,406,751
Canada	101,812,002	121,726,142	152,150,336
Panama	31,243,000	39,992,862	36,025,851
Other Central America	5,934,462	4,587,104	14,897,434
Mexico	1,447,858	586,139	7,311,221
Cuba	943,777	5,239,007	1,875,034
Argentina	2,446,035	224,714	2,930,785
Chile	77,566,178	42,896,554	115,753,700
Peru .....	.....	7,191,550	8,817,215
China	228,571	5,006,796	43,449
Hongkong	6,103	5,247,206	1,680,000
Japan	1,385	3,369,569	.....
Egypt	1,738,032	55,713	125
All other countries	4,890,773	10,226,168	11,455,343
Total	475,143,205	672,931,878	897,858,732

Countries	1917 Gallons	1918 Gallons	1919 Gallons
Belgium .....	.....	.....	5,589,092
Denmark	7,417,986	.....	4,102,754
France	1,675,099	4,734,608	3,918,576
Gibraltar .....	.....	1,132,484	11,417,296
Italy	31,841,040	26,552,915	31,314,336
Netherlands	8,342,248	.....	13,020,123
United Kingdom	559,388,178	787,909,385	446,967,215
Canada	194,550,465	288,416,169	254,806,602
Panama	58,823,791	27,941,143	25,630,299
Other Central America	5,189,497	8,958,722	2,189,028
Mexico	21,611,633	20,428,255	23,166,638
Cuba	2,094,506	3,907,319	3,625,608
Argentina	5,456,280	2,404,904	1,036,625
Chile	127,195,157	30,879,655	35,804,497
Peru	4,208,358	2,120,175	839,663
China	2,846,377	.....	6,159,491
British India .....	.....	2,401,789	2,241,478
Hongkong	391,104	.....	5,577,108

Countries	1917 Gallons	1918 Gallons	1919 Gallons
Japan .....	.....	.....	3,111,990
Egypt .....	.....	.....	1,956,233
All other countries	8,291,989	15,496,118	15,569,387
Total	1,039,323,708	1,223,283,641	898,044,039

BUSINESS OF COLORADO FUEL & IRON CO.

The chief tonnage statistics of the Colorado Fuel & Iron Co., for fiscal years ending June 30, compare as follows, in net tons:

	1915	1916	1917*	1918*	1919*
Coal produced	2,329,069	3,241,505	4,455,244	4,455,881	3,328,613
Coke produced	520,261	702,061	852,100	800,638	515,304
Iron ore produced	441,026	709,601	886,909	809,491	715,145
Pig iron produced	268,661	339,968	408,460	432,406	322,230
Limestone produced	344,033	369,513	452,895	452,986	289,669
Finished iron and steel	324,600	454,220	555,855	478,916	329,537

* Calendar year.

RAILROAD COAL PIERS ON ATLANTIC SEABOARD

The capacity of the railroad coal piers along the North Atlantic seaboard, together with changes made during 1919, is shown in the following summarization of information furnished THE COAL TRADE through the courtesy of interested carriers:

HAMPTON ROADS

Lambert Point (Norfolk, Va.): The capacity of the Norfolk & Western Ry. piers at this point figuring on a general average assortment of vessels is 700 cars per day.

Newport News (Norfolk): The capacity of the Chesapeake & Ohio piers compares favorably with those of the Norfolk & Western at Lambert Point. During 1918, pier No. 12 was rebuilt; it is now used particularly for bunkering vessels.

The actual capacity of the piers at Newport News, figuring on a general average assortment of vessels, is about 550 cars per day. This capacity can be increased as the piers are favored with fast loading vessels, i. e., bottoms requiring the minimum time for trimming.

Sewalls Point (Norfolk): Completion of increased facilities late in 1918 has enabled the Virginian R.R. to treble the capacity of its pier at Sewalls Point. Its dumpers can now handle 90 cars per hour and, with a fair average per cent. of self-trimming vessels, the road can dump between 600,000 and 700,000 tons per month into vessels.

BALTIMORE

Curtis Bay: New Pier: The new pier, with the four mechanical trimmers recently installed, will have a normal average handling capacity of 600 cars per day in summer and 400 cars per day in winter. The mechanical capacity of the pier, however, would far exceed this, it being estimated that the dumpers and trimmers can handle 70 cars per hour.

Old Pier: The old pier, assigned to the loading of cargo coke and coal to schooners, has a capacity of 200 cars per 16-hour day, working two eight-hour shifts.

Locust Point: The Locust Point pier of the Baltimore & Ohio line can handle about 65 cars per day under ordinary working conditions.

Canton: The maximum capacity of the Pennsylvania R.R. Canton piers is approximately 12,000 tons, or 240 cars per day, with the mechanical unloader operating for two ten-hour shifts.

Port Covington: The pier of the Western Maryland R.R. was destroyed by fire last year. It is being rebuilt and the date of completion will be announced later.

PHILADELPHIA

Port Richmond: This is the Philadelphia terminal of the Philadelphia & Reading Ry. The piers (five large ones and two small ones) have dumped as high as 15,000 tons in a ten-hour day. With each pier working to full capacity at least 500 fifty-ton cars could be handled.

Greenwich: The capacity of the Pennsylvania R.R. piers at Greenwich is 21,500 tons or 430 fifty-ton cars daily. At piers 1 and 4 the unloading is done by hand; at pier 3 by a mechanical unloader.

Jackson Street: The Baltimore & Ohio R.R. Jackson Street pier can handle 60 cars a day under ordinary conditions. The operation of this pier has been suspended, however, and there is no present prospect of service being resumed.

NEW YORK

South Amboy: The capacity of the Pennsylvania R.R. at South Amboy, N. J., is 30,000 tons, or 600 fifty-ton cars daily. There are two mechanical unloaders at this point, which are both operated, if there is sufficient tonnage on hand to keep machinery employed, on the basis of two ten-hour shifts.

Perth Amboy: The coal handling facilities of the Lehigh Valley R.R. are located at Perth Amboy, N. J., and under favorable conditions can discharge upwards of 250 cars per day.

Port Reading: This is the New York harbor coal terminal of the Philadelphia & Reading Ry. Under favorable conditions the piers here can handle 500 cars in a ten-hour day. An up-to-date dumping and thawing plant has recently been established at Port Reading, and this will greatly facilitate the handling of coal from cars to vessels.

Arlington: This pier of the Baltimore & Ohio R.R. was put in operation in January, 1918, and has a capacity of 500 cars per 16-hour day, working two eight-hour shifts. The facilities include a thawing shed with a capacity of 40 cars, and the pier is supported by loaded and empty car yards of ample capacity. It is expected that the Arlington facilities will be ample to handle all New York B. & O. tonnage under normal conditions, so that use of the *St. George* facilities on Staten Island has been practically discontinued except in cases of emergency.

Elizabethport-Port Liberty-Pier 18 (Jersey City): The points named are the New York harbor coal shipping ports of the Central R.R. of New Jersey. Under favorable conditions, Elizabethport has a daily capacity of 200 cars; Port Liberty 100 cars; and Pier 18, which was placed in operation last year, 300 cars.

Hoboken: The coal handling facilities of the Delaware, Lackawanna & Western R.R. at Hoboken, N. J., can handle 350 cars during a regular working day of ten hours under favorable weather conditions.

Weehawken: The coal piers of the New York, Ontario & Western R.R. at Weehawken, N. J., can handle 175 cars in a ten-hour working day, with good weather and a full supply of boats and coal.

Undercliff: The Erie R.R. piers at Undercliff, N. J., have a capacity of 250 cars per ten-hour day under favorable weather conditions.

In 1918 Algeria imported 231,431 metric tons of coal; in 1917, the figure was 228,262 metric tons.

TIDEWATER POOL NUMBERS

Since the establishment of the Tidewater Coal Exchange during the war, geographical and grade designations of coal shipped to tidewater ports have been largely superseded by pool numbers. The latest revision (March 18, 1920) of the classification of coal by pools, which has been continued by the Tidewater Coal Exchange, Inc., the successor to the original organization shows the following:

Pool No.	Description of Coal	Size of Coal
1.	American "Standard Low Volatile", viz., mines on United States "Navy Acceptable List".....	Run-of-mine
2.	Other high grade Pocahontas-Flat Top, Tug River and New River low volatile.....	Run-of-mine
2-P	Pocahontas No. 3 seam low volatile on Virginian R.R.....	Run-of-mine
3.	Low volatile Slack*.....	Slack
4.	Good "B" seam (N. Y. C., C. & I. and P. & Susq.).....	Run-of-mine
5.	High volatile gas*.....	Run-of-mine
6.	High volatile steam*.....	Run-of-mine
7.	High volatile by-product*.....	Run-of-mine
8.	Eagle Seam, on Virginian R.R.	Run-of-mine
9.	Somerset "C" Prime.....	Run-of-mine
10.	Superior low volatile†.....	Run-of-mine
11.	Good low volatile**.....	Run-of-mine
12.	By-product, on N. Y. C., B. R. & P., C. & I., P. & Susq. and connections.....	Run-of-mine
13.	Coal not loaded over tipples (wagon mines)*.....	Run-of-mine
14.	Pittsburgh seam, (B. R. & P., P. S. & N., B. & S., P. & S.).....	Run-of-mine
18.	Fair low volatile**.....	Run-of-mine
20.	Low volatile slack (Pools 1-9-10 and 11).....	Slack
31.	Low sulphur gas, Pittsburgh district.....	Run-of-mine
32.	High volatile gas slack‡.....	Slack
33.	High volatile steam, Fairmont-Pittsburgh seam.....	Three-quarters
34.	High volatile steam, Fairmont-Pittsburgh seam.....	Run-of-mine
35.	High volatile steam, Fairmont-Pittsburgh seam‡‡.....	Slack
36.	Low sulphur gas, Pittsburgh district.....	Three-quarters
37.	Marion County, West Virginia, gas.....	Three-quarters
38.	Marion County, West Virginia, gas.....	Run-of-mine
39.	Elkhorn seam gas.....	Run-of-mine
40.	Taggart seam (on N. & W. Ry.).....	Run-of-mine
41.	High volatile steam*.....	Lump
42.	Medium grade Pocahontas-Flat Top, Tug River and New River low volatile.....	Run-of-mine
43.	High volatile steam lump*.....	Lump
	High volatile Northern West Virginia, Kittanning and Sewickley seams.....	Three-quarters
44.	Pocahontas-Flat Top, Tug River and New River.....	Lump
	High volatile Northern West Virginia, Kittanning and Sewickley seams.....	Run-of-mine
45.	High volatile Northern West Virginia, Kittanning and Sewickley seams.....	Slack
51.	High volatile steam (Pool 41 grade)*.....	Egg
53.	High volatile gas (Pool 43 grade)*.....	Egg
54.	Pocahontas-Flat Top, Tug River and New River.....	Egg
56.	Medium grade high volatile steam*.....	Run-of-mine

Pool No.	Description of Coal	Size of Coal
60.	Low sulphur illuminating gas, Westmoreland-Youghiogheny districts	Three-quarters
61.	Low sulphur illuminating gas, Westmoreland-Youghiogheny districts	Run-of-mine
	High volatile steam (Pool 41 grade)*	Nut
62.	Low sulphur illuminating gas, Westmoreland-Youghiogheny districts	Slack
63.	High volatile gas* (Pool 43 grade)*	Nut
64.	Pocahontas-Flat Top, Tug River and New River	Nut
71.	Superior low volatile (mines on Navy Supplementary List) ..	Run-of-mine
84.	Pocahontas-Flat Top, Tug River and New River	Pea

* Mines on N. & W., C. & O. and Virginian and connections, including C. C. & O., Interstate, Norton & Northern and K. & M.

† Mines on B. & O., West. Md., P. & L. E., Cumb. V., Pa. R.R., N. Y. C., B. R. & P., C. & I., P. & Susq. and connections.

** Mines on N. Y. C., C. & I., and P. & Susq.; includes railroad fuel.

‡ Low sulphur gas from Pittsburgh district and high volatile gas from mines on N. & W., C. & O., Virginian and connections.

‡‡ Includes high volatile steam from mines on C. & O., N. & W., Virginian, C., C. & O., Interstate, Norton, K. & M., Pennsylvania, East Broad Top R.R. & Coal Co., Ligonier Valley and Monongahela lines as well as B. & O., West. Md., Pitts., & L. E., Cumb. Valley and Cumb. & Pa. and connections.

MINE LABOR STRIKES: 1899-1918

The year 1918 presented a most notable record with respect to strikes and labor trouble in the coal-mining industry. In no year since the United States Geological Survey began to compile this data have the records shown fewer strikes and less time lost on that account than in 1918. The reports for 1918 show 438,882 man-days lost in the bituminous mines because of strikes in 1918—60,105 men for an average of seven days each. The nearest approach to that figure was in 1907, when 462,392 man-days were lost, but if the time lost is considered together with the total number of men employed or the total man-days worked in the two years, the absence of strikes in 1918 becomes all the more evident.

Labor strikes in the coal mines of the United States in 1917 and 1918

State	1917			1918		
	No. of men on strike	Total days lost	Aver. No. of days lost per man	No. of men on strike	Total days lost	Aver. No. of days lost per man
Alabama	1,835	10,220	6	1,952	3,259	2
Arkansas	2,417	27,315	11	1,207	4,292	4
Colorado	1,664	7,292	4	464	2,318	5
Georgia .....	.....	.....	..	230	1,610	7
Illinois	38,781	464,511	12	10,251	74,850	7
Indiana	11,914	74,695	6	8,083	51,015	6
Iowa	3,275	18,407	6	997	4,774	5
Kansas	7,312	128,514	18	4,675	25,047	5
Kentucky	9,348	425,725	46	1,226	15,318	12
Maryland	1,523	24,605	16	2,517	5,402	2
Michigan	163	1,964	12	1,367	18,194	13
Missouri	2,175	31,767	15	1,191	5,800	5
Montana	1,063	23,680	22	218	218	1
New Mexico	85	775	9	.....	.....	..
North Dakota ...	82	811	10	22	166	8
Ohio	7,710	56,875	7	4,993	44,837	9

State	1917			1918		
	No. of men on strike	Total days lost	Aver. No. of days lost per man	No. of men on strike	Total days lost	Aver. No. of days lost per man
Oklahoma	1,668	37,301	22	630	12,294	20
Oregon	25	25	1	.....	.....	..
Penn. (bit.)	23,655	544,322	23	12,852	112,929	9
Tennessee	4,448	192,730	43	835	2,454	3
Texas	75	260	3	55	550	10
Utah	212	848	4	30	30	1
Virginia	232	2,283	10	523	10,241	20
Washington	192	840	4	75	1,275	17
West Virginia ...	6,166	111,479	18	5,712	42,009	7
Total bitum....	126,020	2,187,244	17	60,105	438,882	7
Penn. anthracite..	34,220	161,155	5	19,290	69,644	4

A summary of labor strikes in the coal mines of the United States since 1899 is shown in the table following:

Year	No. of men on strike	Total work'g days lost	Aver. No. of days lost per man
1899.....	45,981	2,124,154	46
1900.....	131,973	4,878,102	37
1901.....	20,593	733,802	35
1902.....	200,452	16,672,217	83
1903.....	47,481	1,341,031	28
1904.....	77,661	3,382,830	44
1905.....	37,542	796,735	21
1906.....	372,343	19,201,348	51.5
1907*.....	32,540	462,392	14
1908*.....	145,145	5,449,938	38
1909*.....	24,763	723,634	29
1910.....	218,493	19,250,524	88
1911.....	41,413	983,737	24
1912.....	311,056	12,527,305	40
1913.....	135,395	3,049,412	22.5
1914.....	161,720	11,013,667	68
1915.....	67,190	2,467,431	37
1916.....	170,633	3,344,586	20
1917.....	160,240	2,348,399	15
1918.....	79,395	508,526	6

* Bituminous mines only.

COAL CONSUMPTION OF NEW YORK CITY UTILITIES

According to reports filed with the Public Service Commission, New York City public utilities consumed 3,453,408 net tons of coal and coke during 1919. The consumption of the various gas companies was as follows:

	Boiler Fuel Coal	Fuel Coke	Gas Coal Carbonized	Under Retorts Coke	Generator Fuel Coal
Consolidated Gas Co.	10,603	9,519	406	813	120,396*
Astoria Lt., Ht. & Power Co.	27,302	.....	468,268 (Bit.)	48,612	120,200†
New Amsterdam Gas. Co. ..	17,477 C.&C.	.....	.....	.....	103,320†
New York Mutual Gas Co....	9,440	.....	.....	.....	54,515†
Standard Gas Light Co.	4,695 C.&C.	.....	.....	.....	40,816†

	Boiler Fuel Coal	Coke	Gas Coal Carbonized	Under Retorts Coke	Generator Fuel Coal
Central Union Gas Co.	9,139	C.&C.	80,421	10,637	45,165†
New York & Queens Gas Co. 2,478	562	gas coal	.....	.....	6,573
Brooklyn Borough Gas Co. .. 3,185	.....	.....	.....	.....	11,031
Kings County Lighting Co. .. 14,698	.....	.....	.....	.....	25,304
Brooklyn Union Gas Co. 55,179	.....	.....	.....	.....	299,852†
Bronx Gas & Electric Co. .. 10,416	130	gas coal	.....	.....	3,343
Queens Boro. Gas & Elec. Co. 4,323	.....	.....	.....	.....	8,835
New York & Richm'd Gas Co. 6,414	.....	.....	.....	.....	11,852
Totals	176,041	9,519	549,095	59,762	851,202*

*Includes 39,898 tons of coke.

†Includes both coal and coke.

Three of the gas companies made 378,438 tons of coke during the year, of which they sold 119,479 tons for \$669,660.03, an average of \$5.59 per ton.

The reports show that the various electric lighting companies consumed the following tonnages:

	Anthracite	Coal	Bituminous
N. Y. & Queens Elec. Light & Power Co. 6,441	.....	.....	1,770
New York Edison Co.	948,651	.....	.....
United Electric Light & Power Co.	334,553	.....	.....
Flatbush Gas Co.	21,242	.....	1,657
Brooklyn Edison Co.	16,428	.....	427,618
Queens Borough Gas & Electric Co. ....	.....	.....	15,154
Richmond Light & Railroad Co.	33,275	.....	.....
Totals	77,386	1,283,204	446,199

THE WEATHER AT NEW YORK

Official data regarding climatic conditions at New York since the establishment of the Weather Bureau is presented below. The table shows the mean (average) monthly and annual temperatures since the beginning of 1871, also the normal temperature of each of the 12 months of the year. It will be seen that, taken as a whole, one year's weather differs little from another's, the law of averages operating to prevent any very radical departure from the normal annual temperature of 52 degrees.

Here are the details:

MONTHLY AND ANNUAL MEAN TEMPERATURES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1871...	30.4	31.8	43.6	53.6	60.8	69.1	71.9	73.0	60.8	54.9	39.3	29.7	51.6
1872...	29.4	30.3	28.9	47.3	61.1	70.6	76.0	75.5	65.2	55.3	40.4	27.4	50.6
1873...	28.1	28.8	35.6	45.7	56.0	68.8	73.5	71.4	64.9	58.3	37.3	36.3	50.2
1874...	34.5	31.4	38.0	41.3	58.2	70.0	73.6	70.6	68.1	55.1	42.8	33.8	51.4
1875...	25.3	23.2	32.6	42.6	58.5	67.5	72.7	71.9	64.4	52.3	38.9	33.0	48.6
1876...	33.9	31.8	35.2	46.1	58.0	70.7	76.4	72.5	61.8	49.7	44.5	25.1	50.5
1877...	27.6	35.6	36.6	48.0	59.0	68.8	73.8	74.3	66.2	56.6	45.5	39.3	52.6
1878...	32.1	34.6	43.8	52.7	58.2	65.8	74.6	72.9	67.0	57.4	43.6	32.4	52.9
1879...	26.8	27.6	38.4	45.9	60.8	68.8	73.1	70.9	63.2	59.8	43.1	37.3	51.3
1880...	39.8	36.3	35.7	48.7	64.8	70.7	73.2	70.7	65.7	53.8	39.7	27.7	52.2
1881...	25.8	29.5	36.9	46.0	60.2	64.2	72.6	73.1	72.2	59.1	46.3	40.7	52.2
1882...	30.5	35.6	39.8	46.1	53.5	68.2	73.8	71.7	66.9	58.5	41.7	32.2	51.5
1883...	27.8	31.4	33.6	46.6	59.1	69.5	73.3	70.8	63.1	53.7	45.0	33.7	50.6
1884...	26.2	35.1	37.5	47.6	58.8	68.7	70.1	71.5	69.6	56.1	43.2	34.6	51.6
1885...	29.2	33.1	29.7	47.7	56.2	67.3	74.2	70.8	64.1	54.5	44.8	36.0	49.8
1886...	28.5	28.5	36.9	50.3	58.5	65.6	72.9	71.0	67.1	56.5	45.3	30.8	51.0

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1887...	30.1	33.7	34.3	47.7	62.9	68.2	76.7	71.4	63.1	54.7	43.7	36.1	51.9
1888...	26.0	31.8	32.9	48.4	59.3	71.8	72.6	74.8	66.2	51.2	46.8	36.0	51.5
1889...	37.6	28.0	41.5	51.6	62.0	70.4	73.5	71.5	65.8	52.0	46.9	41.4	53.5
1890...	40.2	40.4	37.5	51.0	60.6	70.4	73.4	72.3	66.8	55.5	45.9	31.4	53.8
1891...	34.7	37.5	37.8	52.0	59.9	69.6	70.8	73.6	70.1	54.2	43.8	41.8	53.8
1892...	30.3	33.0	34.6	49.9	59.4	72.0	74.8	73.9	66.0	55.4	42.6	31.3	51.9
1893...	23.3	29.6	36.2	47.8	59.0	69.4	74.8	74.4	64.4	57.6	44.2	35.1	51.3
1894...	34.6	29.6	44.5	49.6	60.8	70.6	76.1	72.8	69.8	57.2	42.2	36.8	53.7
1895...	30.1	25.2	36.4	47.7	59.4	70.0	70.8	73.8	69.7	51.0	46.0	36.9	51.4
1896...	27.6	30.2	32.1	50.4	63.8	66.5	73.4	73.0	64.8	51.9	48.0	32.1	51.2
1897...	29.4	32.6	39.2	48.6	59.3	65.2	72.8	71.0	65.4	56.3	44.1	35.8	51.6
1898...	32.2	33.0	43.7	46.8	56.6	68.9	74.1	74.3	68.9	57.6	44.6	34.4	52.9
1899...	30.8	26.9	38.4	49.6	61.0	72.2	73.8	73.6	65.2	58.2	45.4	36.4	52.6
1900...	33.2	31.6	35.0	51.1	60.8	71.4	76.4	76.8	70.8	60.8	48.7	35.2	54.3
1901...	31.5	25.6	38.6	49.4	58.6	71.4	78.1	75.6	68.4	56.0	39.7	34.4	52.3
1902...	29.2	28.5	44.0	50.6	60.2	68.2	73.6	71.4	65.9	56.9	50.0	32.2	52.6
1903...	30.6	34.4	47.5	52.2	64.1	64.0	74.2	69.2	65.4	56.6	41.4	30.1	52.5
1904...	24.1	25.0	36.4	46.4	63.6	69.2	73.6	72.2	65.9	53.3	41.4	28.2	49.9
1905...	27.5	24.6	40.0	49.8	60.5	68.8	75.4	72.2	66.8	56.9	43.8	37.7	52.0
1906...	37.2	31.2	34.9	51.7	61.8	71.5	74.8	75.3	70.2	56.1	44.9	32.7	53.5
1907...	32.2	24.4	40.8	45.0	55.3	66.2	74.8	72.0	67.8	52.5	45.2	37.8	51.2
1908...	32.0	28.1	41.4	50.6	61.3	71.6	76.8	72.5	67.8	59.6	44.7	35.2	53.5
1909...	33.2	37.3	38.3	49.5	60.4	70.5	73.4	71.6	65.6	53.2	47.7	31.4	52.7
1910...	32.4	31.4	44.7	54.0	60.2	68.0	77.8	72.2	68.4	58.2	41.6	28.0	53.1
1911...	34.8	31.4	37.6	48.2	63.6	68.3	76.0	71.8	66.6	55.6	41.4	39.2	52.9
1912...	23.5	28.4	36.8	49.0	60.7	68.4	74.0	70.7	65.9	58.5	46.6	38.5	51.8
1913...	40.0	30.9	44.0	51.0	60.2	69.2	75.0	72.7	64.6	58.2	46.9	38.8	54.3
1914...	31.4	25.3	35.8	46.6	63.6	67.6	71.1	73.7	66.2	59.0	44.0	31.5	51.3
1915...	34.1	35.2	36.4	53.4	57.7	66.6	72.5	70.4	69.0	56.7	45.4	33.5	52.6
1916...	35.4	27.7	32.2	47.1	59.8	64.2	73.8	73.6	66.0	57.2	44.8	33.8	51.3
1917...	32.4	27.8	38.7	47.2	53.2	68.3	74.1	74.6	63.0	52.0	41.2	25.0	49.8
1918...	31.6	29.6	41.2	49.8	64.0	66.4	72.7	74.8	62.8	53.6	45.7	39.0	52.2
1919...	35.2	34.7	42.0	48.8	61.0	69.7	74.0	70.2	66.5	58.4	44.4	30.0	51.5
Normal	30.9	30.6	37.9	48.7	59.9	69.8	74.0	72.6	66.3	55.9	44.0	34.0	52.0

NOTE—Bold-faced figures indicate highest and lowest monthly and annual means.

The mean temperature, 52.8 degrees, was 1.1 degree above normal. The first seven months and October and November were above normal; September was normal; August and December, below. The highest temperature, 98 degrees, occurred on July 4; the lowest, zero, on December 13.

TEMPERATURE EXTREMES DURING 40 YEARS

	Maximum			Minimum		
	Degrees	Year	Day	Degrees	Year	Day
January	67	1890	12	— 6	1875	10
February	69	1890	5	— 7	1918	5
March	78	1910	30	3	1872	5
May	95	1895	31	31	1880	1
April	91	1915	27	20	1874	5
June	97	1899	6	45	1907	2
July	99	1898	3	50	1873	15
August	102	1918	7	51	1885	27
September ...	100	1881	7	39	1912	30
October	88	1831	1	29	1917	31
November	74	1882	1	7	1875	30
December	68	1891	23	—13	1917	30

Read the COAL TRADE JOURNAL—fifty-one years young.

EASTERN RAILROAD FUEL CONSUMPTION

Tonnages of anthracite and bituminous coal transported by a number of eastern railroads for company use during 1918 and 1919 were as follows:

Classes and railroads	Originating on line		Rec. from connect.		Total	
	1918	1919	1918	1919	1918	1919
ANTHRACITE:						
Baltimore & Ohio.....			355	2,314	355	2,314
Buff., Roch. & Pitts.....				1,456		1,456
Erie.....	221,360	179,911	49	2,299	221,409	182,210
Pennsylvania.....	22,108	143,303	61,652	56,486	83,760	199,789
Total.....	243,468	323,214	62,056	62,555	305,524	385,769
BITUMINOUS:						
Baltimore & Ohio.....	6,645,989	5,167,891	154,711	315,216	6,800,700	5,483,107
Buff., Roch. & Pitts.....	852,288	596,280	1,140	773	853,428	597,053
Buffalo & Susq....	107,066	77,705			107,066	77,705
Chesapeake & Ohio.....	2,178,175	1,965,872			2,178,175	1,965,872
Erie.....	1,227,023	1,132,031	2,739,385	1,849,092	3,966,408	2,981,123
Hunt. & B. T. Mtn.....	24,917	12,952	1,178	10,417	26,095	23,369
N. Y. C. (east)....	2,560,790	1,499,993			2,560,790	1,499,993
Norfolk & Western.....	3,137,938	2,436,757	502,423	570,012	3,640,361	3,006,769
Pennsylvania.....	8,715,355	9,099,700	188,237	320,591	8,903,592	9,420,291
Pitts. & Lake Erie.....	467,584	275,116	196,623	288,829	664,207	563,945
Pitts. & Shawmut.....	53,500	32,319			53,500	32,319
P., S. & N.....	39,619	38,977	23,861		63,480	38,977
Virginian.....	418,693	317,436	18,962	8,204	437,655	325,640
Western Maryland.....	403,021	425,797	277,271	120,573	680,292	546,370
Total.....	26,831,958	23,078,826	4,103,791	3,483,707	30,935,749	26,561,533

All of the figures quoted are net tons.

RAILROAD FUEL CONSUMPTION IN 1917-1918

Consumption of bituminous coal by railroads, according to the reports compiled by the United States Geological Survey, increased from 122,000,000 tons in 1915 to 136,000,000 tons in 1916; to 153,700,000 tons in 1917, and to 154,252,078 tons in 1918.

COAL DELIVERED TO RAILROADS IN UNITED STATES

State in which coal was produced	1915*	1916*	1917†	1918†
Alabama.....	5,072,435	4,626,240	5,641,254	5,207,184
Arkansas.....	803,295	593,956	737,111	772,916
Colorado.....	2,388,515	2,415,779	3,038,297	3,246,855
Georgia.....	5,000	2,396		
Illinois.....	18,928,022	22,818,833	35,431,220	32,370,362
Indiana.....	6,188,550	6,529,195	7,498,031	8,904,451
Iowa.....	4,415,832	4,314,135	4,633,329	3,897,623
Kansas.....	3,154,501	3,237,580	3,200,181	3,243,432
Kentucky.....	4,649,823	4,187,541	4,841,681	6,672,849
Maryland.....	387,121	251,910	571,013	482,800
Michigan.....	394,921	341,693	360,847	274,321
Missouri.....	2,351,940	1,676,150	2,093,956	2,260,729
Montana.....	1,050,319	1,967,574	2,127,243	2,103,232
New Mexico.....	1,635,752	1,567,269	1,991,066	1,735,832
North Dakota.....	3,109	3,329	26,355	13,606
Ohio.....	8,206,128	11,082,187	13,226,615	12,485,162

State in which coal was produced	1915*	1916*	1917†	1918†
Oklahoma	2,573,750	2,254,160	2,327,831	2,248,087
Oregon	5,000	4,789	2,101	4,728
Pennsylvania	34,175,299	33,693,939	36,330,868	37,765,924
Tennessee	3,375,461	2,819,439	2,457,870	3,209,223
Texas	1,037,249	994,530	952,051	941,874
Utah	565,489	693,138	930,659	1,132,838
Virginia	2,826,716	2,747,336	3,078,162	3,065,283
Washington	1,149,446	1,601,274	2,003,965	1,871,084
West Virginia	12,054,954	17,115,908	14,838,314	17,530,053
Wyoming	4,223,290	4,963,440	5,325,638	6,523,714
Imports	378,083	424,802	586,218	647,880
Source not known (rail and lake)		3,071,478	23,889	442,632
Source not known (confiscated)			1,866,101	1,737,791
Total bituminous coal	122,000,000	136,000,000	156,141,866	160,729,942

*Represents consumption as reported by the railroads.

†Represents deliveries to railroads and differs from consumption in so far as stocks differed at beginning and end of year. The 1918 figures are based on United States Fuel Administration data.

Stocks, deliveries, and consumption of bituminous coal for railroad fuel in 1917, by districts, in net tons, are shown in the next table:

	Eastern district	Southern district	Western district	Total
Stocks on hand, January 1, 1917..	3,991,666	459,711	2,242,925	6,694,302
Deliveries, 1917	70,764,301	27,362,062	56,149,402	154,275,765
Coal confiscated, 1917	1,481,317	200,686	184,098	1,866,101
Stocks on hand, December 31, 1917	4,294,852	898,647	3,973,812	9,167,311
Consumption, 1917	71,942,432	27,123,812	54,602,613	153,668,857

The statistics of deliveries in 1917 to classes of roads, classified by originating fields, are given in the table following:

Bituminous fuel coal delivered to railroads by producing districts, 1917 in net tons

Production district	District in Which Consumed			Total
	Southern	Eastern	Western	
Alabama	5,147,115		494,139	5,641,254
Arkansas			737,111	737,111
Colorado			3,038,297	3,038,297
Illinois	4,753,091	9,387,772	21,290,357	35,341,220
Indiana	510,797	6,579,702	407,532	7,498,031
Iowa		13,297	4,620,032	4,633,329
Kansas			3,200,181	3,200,181
Kentucky:				
Hazard, rail	254,788	48		254,836
Northeastern:				
Rail	498,813	15,862		514,675
Lake			1,375	1,375
Southeastern, rail	1,014,198	87,838	1,829	1,103,865
Western:				
Rail	2,662,111	107,690	118,057	2,887,858
River		432	78,640	79,072
Total:				
Rail	4,429,910	211,438	119,886	4,761,234
Lake			1,375	1,375
River		432	78,640	79,072
Total Kentucky	4,429,910	211,870	199,901	4,841,681

Production District	District in which consumed—			Total
	Southern	Eastern	Western	
Maryland:				
Cumberland-Piedmont	104	469,112	.....	469,216
Tidewater		101,797	.....	101,797
Total Maryland	104	570,909	.....	571,013
Michigan		360,847		360,847
Missouri		181,658	1,912,298	2,093,956
Montana			2,127,243	2,127,243
New Mexico			1,991,066	1,991,066
North Dakota			26,355	26,355
Ohio: Northern:				
Rail		7,088,626		7,088,626
Lake			1,562,801	1,562,801
Southern:				
Rail		4,485,028		4,485,028
Lake			90,160	90,160
Total:				
Rail		11,573,654		11,573,654
Lake			1,652,961	1,652,961
Total Ohio		11,573,654	1,652,961	13,226,615
Oklahoma			2,327,831	2,327,831
Oregon			2,101	2,101
Pennsylvania: Central:				
Rail		18,023,766		18,023,766
Tidewater		263,879		263,879
Lake Ontario		195,581		195,581
Total Cent. Penn.		18,483,226		18,483,226
Connellsville:				
Rail		1,246,737		1,246,737
Tidewater		254,492		254,492
Total Connellsville		1,501,229		1,501,229
Greensburg, Westmoreland, Latrobe and Ligonier:				
Rail		4,835,493		4,835,493
Tidewater		414,927		414,927
Total Greensburg, Westmoreland, Latrobe and Ligonier		5,250,420		5,250,420
Northern:				
Rail		1,627,090		1,627,090
Lake			15,000	15,000
Total Northern		1,627,090	15,000	1,642,090
Pittsburgh:				
Rail		4,863,413		4,863,413
Lake		99,117	1,749,179	1,848,296
River		126,626		126,626
Total Pittsburgh		5,089,156	1,749,179	6,838,335
Somerset and Meyersdale:				
Rail		2,571,968		2,571,968
Tidewater		43,600		43,600
Total Som't and Meyersdale		2,615,568		2,615,568
Rail		433,182		33,168,467
Tidewater		976,898		976,898
Lake		294,698	1,764,179	2,058,877

Pennsylvania Coal & Coke Corporation

Miners and Shippers of
Webster and Pardee
Semi-Bituminous Coal

BUNKER CONTRACTORS
United States and Foreign Ports

Shipping Piers

New York—Port Liberty, South Amboy and Port Reading
Philadelphia—Port Richmond and Greenwich
Baltimore—Canton Piers

New York, 17 Battery Place

Boston, 141 Milk Street

Syracuse, Union Building

Philadelphia, Land Title Bldg.

Hartford, 36 Pearl Street

London, E. C., England, Hull, Blyth & Co., 1 Lloyd's Ave.

Production District	District in which consumed			Total
	Southern	Eastern	Western	
River		126,626		126,626
Total Pennsylvania		34,566,689	1,764,179	36,330,868
Tennessee	2,453,723		4,147	2,457,870
Texas			952,051	952,051
Utah			930,659	930,659
Virginia (southwestern):				
Rail	2,638,078	19,413		2,657,491
Tidewater		420,671		420,671
Total Virginia	2,638,078	440,084		3,078,162
Washington:				
Rail			2,002,615	2,002,615
Tidewater			1,350	1,350
Total Washington			2,003,965	2,003,965
West Virginia: Fairmont:				
Rail	143,790	4,216,797		4,360,587
Tidewater		915,567		915,567
Lake			671,858	671,858
River		1,619		1,619
Total Fairmont	143,790	5,133,983	671,858	5,949,631
New River:				
Rail	896,488	690		897,178
Tidewater		88,446		88,446
Total New River	896,488	69,136		965,624
Pocahontas:				
Rail	1,231,547	19,420		1,250,967
Tidewater		83,383		83,383
Total Pocahontas	1,231,547	102,803		1,334,350
Kanawha and Kenova-Thacker:				
Rail	5,152,644	448,234	65	5,600,943
Tidewater		732,800		732,800
Lake			179,853	179,853
River		134		134
Total Kanawha and Ken- ova-Thacker	5,152,644	1,181,168	179,918	6,513,730
Panhandle, rail		54,979		54,979
Total:				
Rail	7,424,469	4,740,120	65	12,164,684
Tidewater		1,820,196		1,820,196
Lake			851,711	851,711
River		1,753		1,753
Total West Virginia	7,424,469	6,562,069	851,776	14,838,314
Wyoming			5,325,638	5,325,638

IMPORTS

Canada:			
Rail	179	270,672	270,851
Tidewater	305,389	9,078	314,467
Lake		900	900
Total Canada	305,568	280,650	586,218

Peale, Peacock & Kerr
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New York

Anthracite Coal



Gas Coal and Coke

RICHARD PEALE, President

H. W. HENRY, Vice-Pres. and Traffic Mgr.

WILLIAM B. OAKES, Treasurer

Grand Central Terminal, NEW YORK

E. E. WALLING, Vice-President

North American Building, PHILADELPHIA, PA.

Source unknown:

Rail	4,775	10,182	6,749	21,706
Lake			2,183	2,183
Confiscated	200,686	1,481,317	184,089	1,866,101
Total source unknown	205,461	1,491,499	193,030	1,888,990
Total bituminous coal *	27,562,748	72,245,618	56,333,500	156,141,866

SUMMARY

SUMMARY					
Shipped by—					
Rail	27,362,062	66,715,841	51,787,025	145,864,928	
Tidewater		3,624,951	10,428	3,635,379	
		District in which consumed			
Production District		Southern	Eastern	Western	Total
Lake			294,698	4,273,309	4,568,007
River			128,811	78,640	207,451
Confiscated, origin unknown	200,686		1,481,317	184,098	1,866,101
Grand total	27,562,748	72,245,618	56,333,500		156,141,866

The division of this consumption by classes and districts was as follows: Southern District: Class 1 roads, 26,695,610 tons; Class 2 roads, 456,715; Class 3 roads, 191,991; switching and terminal lines, 218,432 tons. Eastern District: Class 1 roads, 69,484,637 tons; Class 2 roads, 832,837; Class 3 roads, 226,197; switching and terminal lines, 1,701,947 tons. Western District: Class 1 roads, 53,903,280 tons; Class 2 roads, 809,357; Class 3 roads, 311,758; switching and terminal lines, 1,309,105 tons.

The grouping of the tonnage into districts is in accord with present classification of the Interstate Commerce Commission statistical reports. The three districts correspond roughly to the outlines of the traffic territories of the three major freight classifications. The eastern district (Official Classification territory) comprises that portion of the United States bounded on the west by the northern and western shore of Lake Michigan to Chicago, thence to Peoria, thence to East St. Louis, thence down the Mississippi River to the mouth of the Ohio River; and on the south by the Ohio River from its mouth to Parkersburg, W. Va., thence to the southwestern corner of Maryland, thence by the Potomac River to its mouth. The southern district comprises that portion of the United States bounded on the north by the eastern district and on the west by the Mississippi River. The western district comprises the remainder of the United States, except Alaska and island possessions.

The assignment of carriers to the several districts is necessarily arbitrary in those cases in which carriers operate in more than one of them.

Railroad fuel consumption of anthracite for the coal year ended March 31, 1917, totaled 6,433,542 net tons divided as follows: Pea and larger sizes, 2,779,564 tons; steam sizes (i. e., smaller than pea), 3,653,978 tons.

Bituminous deliveries to the railroads during the calendar year of 1918, as reported by the United States Fuel Administration, were as follows:

Bituminous fuel coal delivered to railroads by producing districts, 1918, in net tons*

	District in Which Consumed			Total
Producing field	Eastern	Southern	Western	
Central Pennsylvania:				
Rail	18,190,635			18,190,635
Tidewater	124,697			124,697
Lake	229,351			229,351
Northern Pennsylvania	2,087,382			2,087,382
Pittsburgh:				
Rail	5,587,177			5,587,177
Lake	35,655		1,763,257	1,798,912
River	139,976			139,976

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EQUITABLE BUILDING, NEW YORK

Miners and Shippers

Anthracite and Bituminous Coal

Coke for General Foundry and Furnace Purposes

SPECIAL ATTENTION GIVEN TO BUNKERING CONTRACTS

Production District	District in which consumed			Total
	Eastern	Southern	Western	
Greensburg-Westmoreland:				
Rail	6,142,348	.....	.....	6,142,348
Rail	2,043,219	.....	.....	2,043,219
Tidewater	267,248	.....	.....	267,248
Connellsville	560,370	.....	.....	560,370
Somerset and Meyersdale:				
Rail	276,210	.....	.....	276,210
Tidewater	329,399	.....	.....	329,399
Fairmont:				
Rail	6,227,528	137,249	.....	6,364,777
Tidewater	1,420,235	.....	.....	1,420,235
Lake .....	.....	.....	947,907	947,907
Northern Ohio:				
Rail	6,920,248	.....	18,784	6,939,032
Lake .....	.....	.....	1,719,332	1,719,332
Southern Ohio:				
Rail	3,826,636	.....	.....	3,826,636
Lake .....	.....	.....	162	162
Michigan	274,321	.....	.....	274,321
Northeastern Kentucky	6,630	579,346	.....	585,976
Hazard, Ky. ....	.....	314,940	.....	314,940
Panhandle, W. Va.	94,198	36	.....	94,234
Kenova-Thacker:				
Rail	3,842	2,367,476	.....	2,371,318
Tidewater	95,522	.....	.....	95,522
Kanawha and Logan (C. & O.):				
Rail	288,434	2,842,106	.....	3,130,540
Lake .....	.....	.....	106,432	106,432
Tidewater	145,000	.....	.....	145,000
Kanawha (K. & M.):				
Rail	152,827	27,101	.....	179,928
Tidewater	445	.....	.....	445
New River:				
Rail .....	.....	809,237	.....	809,237
Tidewater	171,554	.....	.....	171,554
Pocahontas:				
Rail .....	.....	1,541,063	.....	1,541,063
Tidewater	124,861	.....	.....	124,861
Southwestern Virginia:				
Rail .....	.....	2,872,154	.....	2,872,154
Tidewater	193,129	.....	.....	193,129
Southeastern Kentucky:				
.....	28,130	1,560,116	.....	1,588,246
Tennessee .....	.....	3,209,223	.....	3,209,223
Alabama .....	.....	4,789,168	418,016	5,207,184
Western Kentucky:				
Rail	204,054	3,569,816	402,905	4,176,775
Tidewater .....	.....	.....	6,912	6,912
Indiana	7,035,708	920,689	948,054	8,904,451
Illinois	7,393,483	4,457,948	20,518,931	32,370,362
Arkansas .....	.....	.....	772,916	772,916
Iowa	7,949	3,889,674	3,897,623
Kansas	3,243,432	3,243,432
Missouri	202,998	2,057,731	2,260,729

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Fernwood

Hale

Ghem

Ladysmith

Waldo

Saltsburg

THE COAL TRADE

Production District	District in which consumed			Total
	Eastern	Southern	Western	
Oklahoma:				
Rail			2,246,994	2,246,994
Tidewater			1,093	1,093
Texas			941,874	941,874
North Dakota			13,606	13,606
Montana			2,103,232	2,103,232
Southern Wyoming			4,420,482	4,420,482
Northern Wyoming			2,079,950	2,079,950
Colorado			3,246,855	3,246,855
New Mexico			1,735,832	1,735,832
Utah			1,132,838	1,132,838
Washington			1,871,084	1,871,084
Oregon			4,728	4,728
Canada:				
Rail	119		449,024	449,143
Tidewater	198,737			198,737
Unknown:				
Rail	361,090	250	78,124	439,464
Tidewater				3,168
Total	71,866,280	30,161,675	56,964,196	158,992,151
All rail	67,837,933	30,161,675	52,392,100	150,391,708
All tidewater	3,623,365		8,006	3,631,371
All lake	265,006		4,564,090	4,829,096
All river	139,976			139,976

*Deliveries by rail unless otherwise specified.

A general summary of stocks, deliveries, consumption, purchases, sales and confiscations is shown in the next table.

	Railroad District			Total
	Eastern	Western	Southern	
On hand January 1, 1918	4,055,801	3,814,096	1,099,877	8,879,774
Deliveries for year 1918	71,866,281	56,964,195	30,161,675	158,992,151
Coal confiscated	1,065,960	291,675	380,156	1,737,791
Coal purchased from other roads	1,502,848	630,547	461,994	2,595,389
Total received	78,490,890	61,700,513	32,013,702	172,205,105
Sold to other roads	1,420,095	1,455,914	463,938	3,339,947
Sold to industries, etc.	614,446	97,061	163,494	875,001
Total sales	2,034,541	1,552,975	627,432	4,214,948
Net available for consumption	76,456,349	60,147,538	31,386,370	167,990,157
On hand December 31, 1918	4,715,361	7,200,408	1,822,310	13,738,079
Total consumed during 1918	71,740,988	52,947,130	29,563,960	154,252,078

Consumption by classes and districts for the year (1918) were as follows: Southern District: Class 1 roads, 28,683,761 tons; Class 2 roads, 400,760; Class 3 roads, 183,131; switching and terminal lines, 296,308 tons. Eastern District: Class 1 roads, 69,019,215 tons; Class 2 roads, 686,335; Class 3 roads, 378,739; switching and terminal lines, 1,656,699 tons. Western District: Class 1 roads, 50,322,362 tons; Class 2 roads, 713,240; Class 3 roads, 709,443; switching and terminal lines, 1,202,085.

COAL OPERATIONS OF UNITED STATES STEEL CORPORATION

Mineral rights on over 800,000 acres of coal lands are controlled by the United States Steel Corporation through its various subsidiary companies.

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Proprietors, Miners and Shippers of
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Also Ocean Westmoreland Gas Coal

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 Baltimore, Keyser Building
 Chicago, Peoples Gas Building

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New York, Eureka Pier, Harsimus;
 Sixth Street, Jersey City
 Philadelphia, Greenwiche Pier

Baltimore, Canton Piers
 Newport News and Norfolk, Va.
 Duluth, Minn. Superior, Wisconsin

European Agents—Cory Brothers & Co., Ltd., 3 Fenchurch Avenue, London, E. C.

The MORRISDALE COAL CO.

Miners and Shippers of
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The distribution of these properties and the character of the control, together with the coking plants operated for the corporation, as shown in the annual report for the year ending December 31, 1919, were as follows:

NORTHERN COAL AND COKE PROPERTY

	Acreage of Coal Property				Coke Plants		
	Coking Coal	Steam and Gas Coal	Surface	Number of Plants	No. of Beehive Ovens	No. of By-Product Ovens	Coal Plants not connected with Coke Plants
<i>Connellsville Region.</i>							
In Westmoreland, Fayette, Greene and Washington Counties, Pa.:							
Property owned	60,129	23,140	23,998	53	18,940	.....	8
Property leased	414	.....	.....	..	80	.....	..
<i>Pocahontas Region.</i>							
In McDowell and Wyoming Counties, W. Va., and Tazewell County, Va.:							
Property owned .....	.....	.....	55	7	2,137	.....	4
Property leased	62,810	.....	.....	..	.....	.....	..
<i>Mingo and Black Mountain Districts.</i>							
In Logan and Mingo Counties, W. V. (Mingo District):							
Property owned	53,736	.....	32,648	..	.....	.....	..
In Letcher and Harlan Counties, Ky. (Black Mountain District):							
Property owned	74,344	.....	32,002	..	.....	.....	1
<i>Steam Coal Properties.</i>							
In Washington, Allegheny, Butler, Lawrence, Mercer, Cambria and Somerset Counties, Pa.:							
Property owned .....	.....	21,049	846	..	.....	.....	5
Property leased .....	.....	2,346	.....	..	.....	.....	..
Sundry small coal tracts located at or near mill plants in Ohio, Pennsylvania and West Virginia:							
Property owned .....	.....	2,455	154	..	.....	.....	4
Property leased .....	.....	65	.....	..	.....	.....	..
In Illinois and Indiana Coal Fields:							
Property owned .....	.....	74,388	5,025	..	.....	.....	7
<i>By-Product Coke Oven Plants</i>							
<i>Located at Blast Furnace Plants.</i>							
Farrell, Pa. ....	.....	.....	.....	1	.....	212	..
Renwood, W. Va. ....	.....	.....	.....	1	.....	120	..
Clairton, Pa. ....	.....	.....	.....	1	.....	768	..
Lorain, Ohio .....	.....	.....	.....	1	.....	208	..
Cleveland, Ohio .....	.....	.....	.....	1	.....	180	..
Joliet, Ill. ....	.....	.....	.....	1	.....	280	..
Gary, Ind. ....	.....	.....	.....	1	.....	700	..
Duluth, Minn. ....	.....	.....	.....	1	.....	90	..
Total Northern C. and C. Property.	251,438	123,443	94,718	68	21,107	2,558	29

SOUTHERN COAL AND COKE PROPERTY

(Tennessee Coal, Iron & R.R. Co.)

Acreage of coal territory owned, viz.:

Mineral interests and surface	191,738 acres
Mineral interests only	148,146 acres
Surface only	14,746 acres

There are located on developed sections of the above property nine coal mining plants comprising 15 operating mines, producing coal for manufacture into coke and to meet the steam and gas coal requirements of the manufacturing plants of the company. In connection with these coal mining operations there are eight coal washing plants and seven coking plants, the latter comprising a total of 2,974 beehive coke ovens. At Fairfield, Ala., there is located a by-product coke works consisting of 434 ovens.

During the year 22,955,636 tons of coal were mined for use in coking and 5,937,487 tons for power purposes. The beehive coke production was 5,933,056

The Philadelphia & Reading Coal & Iron Company



MINERS AND SHIPPERS OF

FAMOUS READING ANTHRACITE

Hard White Ash

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R. J. Montgomery, Vice-President and General Coal Agent

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Buffalo

St. Paul

Reading

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Rochester

tons and the by-product 9,530,593 tons. In 1918, the total coal production was 31,748,135 tons, viz., 25,393,155 tons for coking and 6,354,980 tons for other purposes; 9,962,403 tons of coke were manufactured in beehive ovens and 7,795,233 tons in by-product ovens. Twenty-four thousand, five hundred and ninety-five people were employed in the coal and coke operations in 1919 and 28,378 in 1918.

Capital expenditures chargeable to coal and coke properties last year totaled \$12,958,647.86. Exclusive of improvements and betterments, these expenditures were represented by the acquisition of 96 acres of coking coal and mining rights to 133 acres in the Connellsville district; 8,933 acres of steam coal in the Pittsburgh district (Greene County); 153 acres in Illinois and 15,662 acres of surface in Letcher and Harlan Counties, Kentucky.

OPERATIONS OF THE PITTSBURGH COAL CO.

The annual report of the Pittsburgh Coal Co. for several years ending December 31 show the following comparisons:

	1915	1916	1917	1918	1919
Mining profits	\$4,219,836	\$5,592,798	\$18,469,548	\$13,040,151	\$8,090,895
Deduct—					
Depletion allowance	841,317	976,595	1,629,160	1,604,558	1,325,043
Depreciation allowance ..	1,132,509	1,087,623	1,821,279	1,533,030	1,168,009
Interest, etc.	592,486	384,654	942,255	895,707	1,038,128
Total deductions	2,566,313	2,448,873	4,392,696	4,033,296	3,531,181
Net earnings	1,653,523	3,143,925	14,076,852	9,006,854	4,559,715
Dividends	1,353,590	1,350,897	4,005,000	3,768,460	3,768,460
Surplus	299,933	1,793,028	10,071,852	*3,398,924	*†337,019

* Income and Excess Profits Taxes for preceding year deducted.

† This figure really represents a decrease in undivided earnings for the year; the total credit in this account as of December 31, 1919, was \$23,485,631, subject to federal tax adjustments.

This is the largest commercial coal producing company in the United States. Its output by districts for the last ten years, in net tons, is shown below:

Year	Pittsburgh District	Hocking District	Illinois District	Kentucky District	Total
1910.....	16,213,912	1,267,914	.....	.....	17,481,826
1911.....	14,739,158	1,281,517	.....	.....	16,020,675
1912.....	16,948,775	1,414,642	.....	.....	18,363,417
1913.....	23,451,623	1,072,873	.....	182,708	24,707,204
1914.....	17,348,551	554,312	279,549	113,439	18,295,851
1915.....	17,590,095	840,421	484,218	219,702	19,134,436
1916.....	16,935,640	1,202,920	471,184	100,182	18,709,926
1917.....	16,162,457	1,296,311	785,555	144,416	18,388,739
1918.....	15,121,274	1,300,589	735,356	.....	17,157,219
1919.....	12,419,115	868,932	342,751	.....	13,630,798

COAL RESOURCES OF NORTH AMERICA

The question of the extent of the coal resources of the North American fields and how long they will last has always been an interesting one to geologists. "In a general way the geologists have outlined the coal fields of the world and have estimated the actual, possible and probable reserves of coal to be about eight trillion tons, a figure which can best be comprehended by knowing that if the present rate of increase of production is maintained, total exhaustion would take place in a period of time variously estimated at



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To Industrial, Manufacturing and Public Service Utilities who are users of coal in quantities of one car to a thousand or more, we offer dependable fuel, prompt, personal service and fair dealing. To operators we offer the services of a long established, well trained, keen and efficient sales organization to aid you in your marketing problems. We are proud of it and you will be. *Contract Tonnages Solicited*

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**SEMI-BITUMINOUS
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from 1,500 to 3,000 years. Of all the nations of the earth, the United States is the most plentifully supplied with coal, about 45 per cent. of the world reserves being within her boundaries. Of great significance, however, is the fact that more than half of our reserves are in the low-grade, sub-bituminous and lignite coals of the West and Southwest. Of all the great coal-producing countries, Great Britain, with its prewar increasing rate of production, most nearly approaches the point of ultimate depletion, which has been placed at one hundred to several hundred years in the future, depending upon whether with improving methods of production the acreage exhausted will continue to increase as it has in the past.*

*Van H. Manning, former Director of the United States Bureau of Mines.

Present day authorities stress the impending exhaustion of the higher grade fields of the eastern United States. Some have declared that the anthracite output will decline seriously within the next generation. Mr. Manning states that the life of the smokeless fields will probably end within 150 years and that the existence of Connellsville coking coal is equally short. Dr. Smith, Director of the United States Geological Survey, recently uttered a warning that, at the present rate of production, the Pittsburgh bed has less than 100 years to live. The Big Vein Georges Creek coal is almost a memory and "similar statements," says Dr. Smith, "could be made regarding the glorious past of the Clearfield coal founded on the Moshannon bed, which is already practically exhausted." His estimates of the life of the West Virginia smokeless fields are in line with those of Mr. Manning, while in the Illinois, Indiana and Ohio fields "we may put the expectancy of life at a few centuries." How these present day estimates compare with some made nearly 40 years ago can be seen by referring to the article on that subject in the 1918 edition of *THE COAL TRADE* (pp. 188-192).

H. M. Chance, in an address before the Engineers' Club of Philadelphia last year, said:

"We are all doubtless fully convinced that in the United States east of the Mississippi River are coal resources sufficient to meet all of our possible requirements for many generations, this having been proved by the work of our state and national Geological Surveys. The Appalachian coal field extends as an unbroken and continuous region from western Pennsylvania and eastern Ohio through Maryland, West Virginia, eastern Virginia, eastern Kentucky and Tennessee, and northwestern Georgia to Alabama; and our Central coal field extends from western Indiana over a large portion of central and southern Illinois southwardly to the western part of Kentucky and westwardly includes large areas in Iowa, Missouri, Kansas, Arkansas, Oklahoma and Texas, with a disconnected district of considerable size in central Michigan. These coal fields contain all kinds and grades of bituminous coal and also include relatively small areas of coal classed as semi-bituminous and semi-anthracite. Most of these coals are true bituminous coals; that is, they have a relatively high percentage of volatile combustible matter and have caking or coking properties, but only a relatively small percentage of these total reserves will make strong coke of a quality suitable for use in iron smelting. All of these coals are available as fuels for power production, but their value for this purpose as measured in B.t.u. varies all the way from very low grade coals of 8,000 to 9,000 B.t.u. value up to coals varying from 14,000 to 15,000 B.t.u. value.

"A small fractional part of this vast supply consists of strictly high-grade coal—that is, coal with low percentages of ash, of water (moisture) and of sulphur—existing in coal beds close enough to the surface and of sufficient thickness to be mined at reasonably low cost. This is coal the fuel value of which is rated in excess of 14,000 B.t.u. Possibly less than one per cent. of

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Miners and Shippers of
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A. DENITHORNE, President

48 Congress Street, Newark, N. J.

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WM. A. STAPLES, General Manager

141 Milk Street, Boston, Mass.

General Offices: 16 South River Street, Wilkes-Barre, Pa.

our total coal resources consists of this high-grade cheaply mined coal, and of this relatively small quantity only a fractional part is of the refractory ash type, which enables the engineer to use it for forced firing of boilers up to 250 per cent. of their rating.

"The readily accessible reserves of coal of this type are being depleted rapidly; no large areas of such coal are in reserve, and with increasing demand the premium commanded by coals of this grade is steadily rising.

"By designing and encouraging the building of power plants requiring for their efficient operation coals of this type, engineers are in part responsible for accentuating this difficulty. It seems to me that the time has come when engineers should direct their attention to the development of types of plants designed to utilize coals of lower grade, not only to avoid the steadily rising premium on the high-grade coals but also to conserve these supplies of high-grade fuel for marine and metallurgical uses. We have every reason to believe that the premium commanded by high-grade coals of this class will steadily advance and that it will not be long before plants that are not designed to use fuels of medium grade will be operated only at largely increased cost.

"In the East most of our power must be produced by coals of medium (or second) grade, ranging in fuel value from about 12,500 up to 14,000 (or a little more) B.t.u. Of these we have an abundant available supply, and we need not fear that the price of these coals will advance because the deposits are insufficient or inaccessible. In the regions west of Ohio (excepting Arkansas and Oklahoma) the coals are generally of lower (or third) grade and the local (and cheap) supply for power production is limited to coals having a fuel value of from about 10,000 to 12,500 B.t.u.

"As necessity is the mother of invention, engineers have striven to develop methods of cheap power production for utilizing low-grade coals in the regions west of Ohio and have been working out improvements in plant design that will doubtless find many useful applications in the utilization of our medium grade coals here in the East."

In the following table, based upon data compiled in 1913 in connection with the 12th International Geological Congress, the coal resources of North America with their total exhaustion to date (1918) is shown. Figures are in net tons.

Province or State	Original Mineable Coal			Exhaustion to Date
	Anthracite	Bituminous	Lignite	
Alabama		67,618,679,000		517,861,982
Arizona		10,032,750	14,147,831,250	
Arkansas	90,620,208	1,897,061,540	400,239,252	69,622,092
California		27,537,584	16,452,166	7,739,530
Colorado	293,925,417	131,443,447,323	64,212,906,510	841,414,715
Georgia		938,376,500		15,179,811
Idaho		600,163,956	100,144,044	
Illinois		201,491,136,000		1,988,889,228
Indiana		53,075,121,750		538,855,858
Iowa		29,173,252,500		339,202,338
Kansas		30,013,578,000		247,110,979
Kentucky		123,384,082,500		499,147,573
Maryland		8,048,250,000		296,899,009
Michigan		12,005,453,250		43,936,566
Missouri		84,038,062,500		215,900,610
Montana		2,669,020,200	378,619,579,800	88,695,304
N. Mexico		19,000,822,475	172,926,677,275	91,871,659
N. Dakota			698,246,104,500	13,045,108
Ohio		94,010,175,000		1,268,845,957
Oklahoma		54,976,383,000		119,904,818
Oregon			1,000,408,500	8,491,293
Pennsylvania	20,980,593,353	112,653,761,897		9,716,272,407
S. Dakota			1,020,804,750	
Tennessee		25,676,673,750		332,007,481

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Province or State	Original Mineable Coal				Exhaustion to date
	Anthracite	Bituminous	Lignite	Total	
Texas		8,001,580,073	23,012,296,177	31,013,876,250	56,497,933
Utah		88,221,174,285	159,084,465	88,380,268,750	80,583,364
Virginia	900,407,840	21,609,776,160		22,510,188,500	213,396,715
Washington		11,439,366,246	52,467,707,754	63,907,074,000	121,586,767
West Va.		152,614,113,750		152,614,113,750	1,800,948,769
Wyoming		80,590,426,139	590,437,268,611	671,027,694,750	236,784,757
Alberta	1,182,571,708	217,593,194,364	963,795,942,428	1,182,571,708,500	44,516,881
Arctic Is.		6,615,000,000		6,615,000,000	
Brit. Colum. .	670,628,188	77,289,898,719	5,867,996,648	83,828,523,555	60,630,458
Manitoba			176,400,000	176,400,000	
N. Brunswick. .		166,477,500		166,477,500	1,344,858
N. Scotia		10,715,162,220		10,715,162,220	172,322,387
N. W. Ter.			5,292,000,000	5,292,000,000	
Ontario			27,562,500	27,562,500	
Saskatchewan. .			65,942,730,000	65,942,730,000	3,707,798
Yukon	46,293,975	231,469,875	5,168,586,150	5,446,350,000	

Japanese coal production in 1919 reached 19,098,584 metric tons. This was an increase of 6.6 per cent. over the 1918 output.

COAL MINING MACHINES USED IN UNITED STATES

The percentage of machine mined coal in the bituminous fields of the United States increased from 55.5 to 55.9 per cent. in 1918. The tonnage so produced in 1918 was 323,931,133 tons, as compared with 306,396,127 tons in 1917—an increase of 17,535,000 tons or 5.7 per cent.

There has been a steady increase in the percentage that machine mined coal bears to the total output of the states where mining machines have been installed, and in the number of machines in use. The number of mining machines employed was 6,658 in 1903, 7,663 in 1904, 9,184 in 1905, 10,212 in 1906, 11,144 in 1907, 11,569 in 1908, 13,065 in 1909, 13,254 in 1910, 13,829 in 1911, 15,298 in 1912, 16,379 in 1913, 16,507 in 1914, 15,692 in 1915, 16,198 in 1916, 17,235 in 1917 and 18,463 in 1918.

COAL MINED BY MACHINERY

The tonnage mined by machine in each state is thus reported by the United States Geological Survey:

State	1913	1914	1915	1916	1917	1918
Alabama	4,124,301	4,937,222	5,285,133	5,802,150	6,062,744	5,951,547
Arkansas	251,105	351,838	391,873	224,245	154,615	242,984
Colorado	2,311,493	2,502,558	2,628,300	3,342,345	4,077,520	4,574,017
Illinois	32,630,555	32,640,528	36,011,461	40,791,408	48,576,462	50,566,911
Indiana	9,737,425	9,360,683	9,930,445	11,367,758	14,344,845	14,997,532
Iowa	120,716	308,284	414,606	636,892	1,022,101	876,754
Kansas	22,120	39,194	43,394	37,897	34,823	56,314
Kentucky	14,353,583	15,731,332	17,468,502	21,441,700	23,221,880	24,808,171
Maryland	82,689	110,065	224,651	221,609	290,116	301,965
Michigan	862,700	998,935	973,151	1,044,583	1,199,263	1,272,285
Missouri	863,946	750,037	861,957	947,811	1,127,843	1,244,682
Montana	1,076,641	1,213,051	1,534,064	2,024,799	2,070,075	2,268,318
New Mexico ..	497,070	619,472	644,698	510,219	1,052,684	1,236,709
No. Dakota...	222,227	208,199	203,775	218,276	300,417	344,482
Ohio	32,642,848	16,147,630	20,008,259	31,669,049	35,828,497	38,841,452
Oklahoma	670,629	1,053,526	1,122,512	1,258,022	1,605,117	1,899,487
Pennsylvania .	92,487,438	79,657,459	87,752,569	94,391,391	95,423,140	98,334,139
Tennessee ...	1,842,658	1,377,984	1,507,425	1,517,426	1,399,825	1,549,945
Texas	100,899	27,971	34,103	19,000	2,688	2,000
Utah	625,475	944,421	1,540,737	2,050,405	2,259,697	2,767,084

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Acosta & Co., Buenos Aires, Argentine

Levy Freres, Paris, France

State	1918	1914	1915	1916	1917	1918
Virginia	4,206,988	4,092,810	5,130,827	6,011,262	6,440,561	6,394,276
Washington ..	280,515	328,043	310,598	277,236	231,856	249,110
W. Virginia ..	39,355,418	42,263,394	46,288,657	54,408,511	56,075,888	60,688,232
Wyoming ...	3,050,784	2,734,151	2,923,582	3,477,081	3,593,470	4,462,737
Total ..	242,421,713	218,399,287	243,237,551	283,691,475	306,396,127	323,931,133

The percentages of machine mined production in years 1905-18 have been, respectively, 28.8, 33.67, 35.1, 37.5, 38., 41.7, 43.8, 46.8, 50.7, 51.7, 55., 56.4, 55.5, and 55.9.

COAL PRODUCED PER MAN EMPLOYED, 1913-1918

	Men em- ployed	Anthracite			Men em- ployed	Bituminous		
		Days worked	Ave. tonnage per day	per man per year		Days worked	Ave. tonnage per day	per man per year
1913....	175,745	257	2.08	520	571,882	232	3.61	837
1914....	179,679	245	2.06	505	583,506	195	3.71	734
1915....	176,552	230	2.19	504	557,456	203	3.91	794
1916....	159,869	253	2.16	548	561,102	220	3.90	896
1917....	154,174	285	2.27	646	603,143	243	3.77	915
1918....	147,121	293	2.29	672	615,305	249	3.73	942

VOLUME OF SMOKELESS COALS

Pocahontas coal is probably more extensively shipped in sizes than any other bituminous tonnage produced in the United States. As in the case of anthracite, the amount of space required for the storage of the different sizes of coal varies considerably. Extensive tests over a long period of months were made some time ago, with a view to ascertaining what variation there might be.

Taking a very large number of standard 50-ton cars, as loaded at the mines, it was found that when carrying run-of-mine coal they would load about 48 tons; when loaded with slack 46 tons, with lump 44 tons, with nut 42 tons, and with egg 40 tons. A difference of two tons to the size occurred with such regularity as to establish a definite rule upon this point.

Based upon information as to the size of cars furnished through the courtesy of the transportation department of the Norfolk & Western Ry., the following calculations as to space required for each ton of coal of the several sizes are given:

Run-of-mine	Net ton, 39.73 cu. ft.; Gross ton, 44.48 cu. ft.
Slack	" " 41.41 " " 46.37 "
Lump	" " 43.29 " " 48.49 "
Egg	" " 47.62 " " 53.32 "

DAMPNESS CAUSES A VARIATION

There is always some variation in space required for coal, particularly for soft coal shipped a considerable distance under varying weather conditions, as dampness makes a great difference, particularly in the case of slack, to say nothing of the effects of snow and ice during the winter season.

The above figures represent, as before stated, averages obtained through a long series of experiments, and may therefore be taken as correct in a general way. There is unofficial data in the trade as to a net ton of slack occupying 42.50 cubic feet, and by comparison it is seen that this does not differ much from the figure of 41.41 appearing as average result.

On the *Coal Trade Journal* area card, Pocahontas was shown as requiring 38.40 cubic feet for run-of-mine coal. This was evidently too low a figure, and it would appear that the experiment upon which that result was based had to do with cars closely packed rather than loaded in the ordinary way. The present figures are believed to show how much space coal takes up when

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handled in the ordinary course of business, and not the space that it occupies when under pressure or compressed in any way—in other words, the loose, not the solid, volume of a certain amount of coal.

For New River coal the following figures have been reported by the Winding Gulf Colliery Co. for gross and net tons:

Run-of-mine (damp)	Net ton, 36.28 cu. ft.; Gross ton, 40.65 cu. ft.
Run-of-mine (dry)	" " 36.65 " " " 41.05 "
Slack and nut	" " 40.25 " " " 45.09 "
Lump and egg	" " 42.88 " " " 48.03 "

The Sewell (New River) seam is relatively heavy, and so this coal occupies a little less space than Pocahontas.

UNITED STATES RAILROAD CONSTRUCTION AND EQUIPMENT

The number of miles of railroad, locomotives, freight and passenger cars built since 1905 were as follows:

	Mileage	Locomotives	Freight Cars	Passenger Cars
1905.....	4,388	*5,491	*165,155	*2,551
1906.....	5,623	*6,952	*240,503	*3,167
1907.....	5,212	*7,362	*284,188	*5,457
1908.....	3,214	*2,342	*76,555	*1,716
1909.....	3,748	*2,887	*93,570	*2,849
1910.....	4,122	*4,755	*180,945	*4,412
1911.....	3,066	*3,530	*72,161	*4,246
1912.....	2,997	†4,915	†152,429	†3,060
1913.....	3,071	†5,332	†207,684	†3,296
1914.....	1,532	†2,335	†104,541	†3,691
1915.....	983	†2,085	†74,112	†1,949
1916.....	1,098	†4,075	†135,001	†1,839
1917.....	979	†5,446	†151,401	†2,000
1918.....	721	†6,475	†124,708	†1,503
1919.....	686	†3,272	†163,185	†551

* Includes Canadian output.

† Includes Canadian output, and equipment built in railroad shops.

‡ Engines built for foreign use included.

DETAILS OF CONSOLIDATION COAL CO'S OUTPUT

Since 1864 the Consolidation Coal Co. has mined 203,307,563 net tons of coal. Of this total, 65,374,197 tons have come from the Maryland operating division, 91,442,395 from the West Virginia, 29,413,329 tons from the Pennsylvania and 2,206,880 tons from Kentucky divisions. Production figures by divisions during the past six years have been as follows:

Division	1914	1915	1916	1917	1918	1919
Maryland	2,231,423	2,263,342	1,682,264	1,288,488	1,067,753	856,451
West Virginia ...	4,659,246	5,206,079	4,866,851	4,159,923	3,564,975	2,853,748
Pennsylvania	1,990,637	1,923,487	1,484,140	1,496,920	1,327,100	1,283,254

KENTUCKY:

Miller's Creek...	555,464	602,025	563,002	465,710	392,259	381,053
Elkhorn	1,273,246	1,727,451	2,511,427	2,122,502	1,700,923	1,825,827
Total	10,710,016	11,722,384	11,107,684	9,533,543	8,053,010	7,200,333

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